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The Public Lighting Tables of the American Meter Company will be found in the page advertisement of that Company.

CONTENTS.

An Asterisk (*) denotes an illustrated article.

OFFICIAL NOTICES—

Thirtieth Annual Meeting, American Gas Light Association 361

Change of Address, Secretary New England Association of Gas Engineers 362

EDITORIALS—

Briefly Told 362

Notes.

Proceedings, Tenth Annual Meeting of the Pacific Coast Gas Association—Official Report—Revised by the Secretary—Continued from Page 334 363

Second Day, Morning Session—Committee on Nomination of Officers—Experience Department—Discussion—Differential Gas Rates, by Mr. M. C. Osborn—Some Desultory Matter—In the Matter of an Official Organ—Second Day, Afternoon Session—Discussing the Paper on Differential Gas Rates.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES 371

Hints from Bethlehem, Pa.—New York Agency for the General Gas Light Company—A Sign of the Times—Nantucket's Gas Works—An Official Gas Inspector and His Salary—The Proposed Plant for Holland, Mich.—Progress at Houston, Tex.—Could not get Coal, so the Works were Shut Down—Mr. Robt. Seitz in Charge at Hillsdale City, Mich.—Resignation of Mr. C. D. Strong—Proposed Gas Works for Atlantic Highlands, N. J.—Sale of the Sag Harbor (L. I.) Plant—Improvements at Harrisburg, Pa.—Hearing on Proposition to Increase Capital Stock, Springfield, Mass.—And Other Items.

The Market for Gas Securities 373

[OFFICIAL NOTICE.]

Thirtieth Annual Meeting, American Gas Light Association.

OFFICE OF THE SECRETARY,
NEW YORK CITY, Sept. 1, 1902.

General Announcement.—There will be a meeting of the American Gas Light Association held at New York city, October 15th to 17th, 1901.

The meeting will be called to order by the President, Wm. R. Beal, of New York city, at 10 A.M., Wednesday, October 15th.

The meeting hall will be the breakfast room in the New York Athletic Club House, corner 59th street and 6th avenue.

The headquarters will be at the Plaza Hotel, 59th street and 5th avenue.

The most satisfactory quarters are always obtained by writing in advance to the hotel people, and in doing so a reply should be requested, for which a self-addressed, stamped envelope should be inclosed, as misunderstandings may thereby be averted.

The Plaza Hotel has guaranteed to accommodate 100 persons attending the meeting, at the following rates for rooms:

American plan: Single rooms $5 per day; double rooms, occupied by two persons, from $9 per day (that is, $4.50 for each person) and upwards. Some of these rooms have baths and some are without baths. The ones with baths will go to those applying first.

European plan: Single rooms, $2.50 per day; double rooms, occupied by two persons, $4 per day (that is, $2 per day for each person) and upwards. The remarks as to bath rooms on the American plan apply here also.

The Savoy and the Netherland Hotel, both situated at 59th street, on the opposite side of 5th avenue from the Plaza, have each guaranteed to accommodate 50 persons at the following rates, on the European plan:

Single rooms, without bath, $2 per day. Single rooms with bath $3 per day. Double rooms with bath, occupied by two persons, $5 and $6 per day (that is, $2.50 and $3 per day for each person). For those desiring suites there will be a limited number at from $8 to $14 per day.

An effort will be made to obtain rates from some other hotels in the vicinity, and, if successful, notice will be sent to the members before the meeting.

The roll call will be made by means of the door card system. Each member upon entering the hall for the first time will, at the door, receive a special card upon which he will find his name, address, etc., as it appears on the Secretary's books, and such card should be corrected and given to the doorkeeper. Members in attendance should attend to this very carefully, as these cards are used immediately after the meeting for correcting the annual membership list. Visitors will please hand to the doorkeeper their personal cards.

A blank form of application for membership accompanies this circular. More can be obtained of the Secretary.

Remember, all applications must be in the Secretary's hands by October 15th, at the very latest, otherwise they will not be acted upon at this meeting.

LIBRARY OF CONGRESS. SEP 15 1902 SMITHSONIAN DEPOSIT.

The list of papers to be read at the meeting is as follows:

"Some Notes on Cement Masonry," by Mr. I. N. Knapp, Philadelphia, Pa.

"The Care and Maintenance of Incandescent Gas Burners," by Mr. McDougald Dexter, Columbus, Ga.

"The Cleaning and Repairing of Gas Stoves," by Mr. Geo. S. Clarke, Kansas city, Mo.

"Gas Rates and a Franchise Tax," by Mr. Geo. McLean, Dubuque, Ia.

Also several other papers, the exact titles of which have not yet been decided upon.

If the papers are of a sufficiently high standard, the Beal medal will be awarded to the author of the best paper presented, the question of which is best to be decided by the proper committee.

The officers are endeavoring to arrange for a lecture on some subject of interest to the members, to be delivered during the meeting.

In addition to the papers and lecture, the report of the Research Committee will deal with the question of Pipe Standards, referred to the Committee at the last meeting, and with other subjects that should give rise to a good discussion; and there will be an interesting report from the Committee on Uniform Accounts. During the days of the meeting all the announcements will be posted on the bulletin boards at the headquarters and meeting hall. All members are warned to take notice thereof accordingly. All members attending the meeting are particularly requested to wear their membership badges in plain sight, thereby greatly aiding the officers and the local committee in their work, by affording a ready means of recognition.

In order that the "Year-Book," containing the report of this meeting, may be published and issued to the members immediately after the meeting, notice is hereby given that, if any of the speakers at this meeting desire to correct their remarks before they are printed, they will be given an opportunity before leaving New York city, but not after. The stenographer will have typewritten copy of the principal discussions prepared at the headquarters between the sessions of the meeting, and all those who desire to correct their remarks must notify the Secretary at the close of the session at which such remarks are made, as all the reports will be turned in to the printer immediately after the adjournment of the meeting.

[Here follows a detailed statement respecting the special rates for transportation—one fare and one-third, going and returning by the same route—that have been promised by the named Passenger Associations. These include the Trunk Line Passenger Association, the Central Passenger Association, the Western Passenger Association and the Southeastern Passenger Association. This series virtually means that any member of the Association may avail himself of the shortened fare under the certificate plan.]

Special.—The entertainment as now planned will include for the ladies a carriage ride on one afternoon and a theater party on the evening of the banquet. For the members there will be provided a banquet at the New York Athletic Club on Thursday evening, and parties will be organized to visit the various gas works, or some of the large electric power stations, or both, on Friday, and if possible an inspection will also be made of part of the work on the underground railway now building in New York at a point where this work has been practically completed. You will be notified later of the price of the tickets for the banquet and other entertainment.

Be sure to obtain a railroad certificate when buying your ticket for New York. The greater the number of certificates handed in, the easier it is to get the reduction in rates for future meetings, since the railroad officials count the certificates turned in as marking the full attendance. In our case the number of certificates is from 50 to 100 less than that of the persons in attendance, and our requests for lower rates are not given the consideration they should receive. Apply for ticket and certificate at least 30 minutes before train time. Each person must sign his own certificate at time of purchasing tickets for New York. Be sure to hand the Secretary your certificates, accompanied by 25 cents for each one, as soon as you reach the headquarters. Apply for return ticket at least 30 minutes before train time, and have your certificates with you. All persons, ladies included, attending the meeting are entitled to the reduced rates from the territories named. Members will please hand their certificates to the Secretary or his clerk upon arrival at place of meeting. If there are 100 members present, holding certificates, each certificate will then be properly indorsed and handed back to the owner before adjournment.

Any members having questions which they desire to put into the question box should send the same to the Secretary as soon as possible, in order to give him an opportunity to have them printed and distributed to the members before the meeting, so as to secure for them careful attention.

ALFRED E. FORSTALL, Secretary.

[OFFICIAL NOTICE.]

Change of Address, Secretary New England Association of Gas Engineers.

NEW ENGLAND ASSOCIATION OF GAS ENGINEERS,
OFFICE OF THE SECRETARY,
NEW BEDFORD, MASS, August 13th, 1902.

To the Members of the New England Association of Gas Engineers:

After the 18th inst. the office of the Secretary of the New England Association of Gas Engineers will be at 26 Central Square, East Boston, Mass.

N. W. GIFFORD, Secretary.

BRIEFLY TOLD.

NOTES.—

GENERAL ANDREW HICKENLOOPER, President of the Cincinnati Gas and Electric Company, accompanied by Mr. William A. Miller, General Superintendent of Manufacture for the Company, sailed for Europe last week. Their purpose is to make a close investigation of the gas works of Great Britain and the Continent, and it is thought that their return will not be reported until the middle of November.

THE gas and electric lighting interests of Xenia, O., have been merged, the name af the succeeding corporation being that of the Xenia Gas and Electric Light Company. The Directors named to manage its affairs for the ensuing year are: John H. Brown and George Mayer, of Chicago, and C. H. Kyle, F. E. McGervey and F. J. H. Schell, of Xenia. The gas plant will be rebuilt. Mr. McGervey was Secretary and Treasurer of the old Xenia Gas Light and Coke Company.

GAS has been turned into the mains of the Black Hills Gas Company, which plant was constructed for the supply of the residents of Deadwood, S. D. The plant is equal to an output of 100,000 cubic feet per diem.

THE American Light and Traction Company is negotiating for the purchase of a majority or all of the stock of the Jackson (Mich.) Gas Company. The terms offered are as follows: For each share, on a cash basis, $41.67—on a par value of $50; or $40 par value in preferred stock and $12 par value in common stock of the American Light and Traction Company. The principal holders of the Jackson Company's shares are residents of Grand Rapids, and those who wish to avail themselves of the purchasing Company's offer may do so either through the Michigan Trust Company, of Grand Rapids, or through the Trust Company, of America, of this city.

THE queer medley of financiers who are proposing to operate an opposition company in Atlantic City, N. J., have reached the organizing point. Their "project" has been given the name of the Peoples Gas Company, they have capitalized it in $150,000, they have pledged themselves to sell gas at $1 per 1,000—that is, whenever they have any to sell—and they have named the following executive management: President, John S. Westcott; Vice President, Winfield S. Laumaster; Secretary, William F. Warke; Treasurer, Peter Ballingall; Solicitor, John S. Westcott. It is all-in-all a very queer combination.

MR. FREDERICK CHARLES, Superintendent of the gas plant that is being constructed at Whittier, Cal., says that gas will be turned into the mains by December 1st.

THE National Coke and Gas Company, whose registered office was in Jersey city, N. J., has filed a certificate announcing the dissolution of the concern.

IT is estimated that the betterments proposed for the plants of the Equitable Gas Light Company, of Memphis, Tenn., will entail an expenditure of $200,000.

AT a recent meeting of the Board of Trustees of the village of Clyde, N. Y., the Treasurer was directed to sell at public auction all interest in the property of the Clyde Gas and Electric Company, which has recently discontinued its service, for the shortest period, not to exceed 50 years, for which any person will take the property and pay the tax of $63.50 now unpaid. The tax was originally $146.71. Of this amount $83.21 has been paid from the results of two public auctions of levied goods.

THE proprietors of the Suburban Gas and Electric Company, which supplies gas to the towns of Revere and Winthrop, Mass., have reduced the selling rate to $1.15 per 1,000 cubic feet.

THE shareholders of the Concord (Mass.) Gas Light Company have elected the following officers for the ensuing year: Directors, Lyman D. Stevens, John Kimball, Henry McFarland, John P. George, Fred. A. Stillings, B. C. White and John M. Mitchell; President, Lyman D. Stevens; Clerk, John C. Ordway. Mr. Kimball is as great a believer in the growth of the gas business as ever.

[Official Report—Revised by the Secretary.—Continued from Page 334.]

PROCEEDINGS, TENTH ANNUAL MEETING OF THE PACIFIC COAST GAS ASSOCIATION.

Held in the Rooms of the Pacific Gas Improvement Company, San Francisco, Cal., July 15th and 16th, 1902.

Second Day, July 16th.—Morning Session.

The meeting was called to order, pursuant to adjournment.

The President appointed as a

Committee on Nomination of Officers,

Messrs. E. C. Jones, J. W. Thomas and F. H. Eichbaum.

The President introduced Mr. R. P. Valentine, of Sacramento, Cal., who, as Editor of the

EXPERIENCE DEPARTMENT,

presented the following budget of "Experiences."

Mr. President and Fellow Members: The report of the Editor of the Experience Department for the present meeting will, I fear, be a disappointment to you. I hasten to assure you, however, that the fault does not lie with the fraternity at large, but with the Editor himself. Before preparing this report I glanced over the accounts of reports given in the past, and I find that they are in every case models of excellence. Not feeling myself capable of imitating the example of my worthy predecessors, I have decided to present the present report in as direct a manner as possible.

Experiences Nos. I. and II., donated by one of the oldest and most respected members of the Association, are as follows:

No. I.—*Experienced a Cold Snap.*—In November of last year we finished a new single-lift gasholder, set in a steel tank, placed mostly above ground. In January we had a few days of cold weather that made ice pretty fast. A day or two after the cold weather came, I noticed that the holder did not appear to fall when gas was withdrawn or rise when making, and, on investigation, found that a coating of ice was formed on the entire inner surface of the tank, and that the wheels were imbedded in blocks of ice. Keeping the surface broken and ice shoveled out did not help matters at all, so I resorted to steam, blowing from a hose immersed as near the wheels as we could get. It took about 3 days of this application, with the help of long chisel bars, to get the holder afloat.

The writer concludes by asking, "What can we do next winter to prevent a recurrence of the trouble?"

No. II.—*Lucky for Once.*—November 12th last we connected a new holder to the plant, putting it into use, but continued to use the old holder. November 26th the tank of the old holder (made of redwood) burst, letting out a large portion of the water. Of course, with the new holder we were all right, but where would we have been without it? Moral, "Don't shave quite so close next time."

No. III.—Which in reality is three experiences in one, follows.—While going down town one evening, between Christmas and New Years, about a quarter past seven, I heard an explosion like the discharge of giant powder. Looking over in the direction of the gas works I saw the sky illuminated as bright as day. Well, I knew there was trouble, so made tracks for the works. Upon arriving I found the main supply holder flat, with a large hole in it, and the gas still burning. After closing the inlet and outlet valves we succeeded in smoldering the fire with a wet blanket.

Upon examination, we found a hole about 18 inches by 3 feet long in the top of the holder, in the course of sheets next to the angle iron.

Not having any No. 10 or No. 12 gauge iron, and being unable to procure any in town, I was compelled to use two sheets of No. 16 iron, 2 feet by 3 feet, by 6 inches, which I riveted together. I then cut in two handholes and punched $\frac{9}{16}$-inch holes about 2 inches apart all around the edge for bolts. This plate was then laid over the hole and the holes marked.

The holes were punched in the holder by means of a boiler maker's hand punch, which very fortunately a neighboring blacksmith had. The plate was then put in place with a layer of asbestos wicking and red lead, with wicking around the bolts, and bolted tight. The hand holes were then closed with a piece of iron and a bolt, similar to a hand hole in a boiler.

This work was completed about 1:30 A.M., when we commenced to make gas and fill the holder. This was accomplished by 4:30, when we were again ready for business, but did not turn the gas on the town until after daylight, or 7 o'clock.

The cause of this explosion was worrying me a great deal, until one of the men, while gathering up the tools the next morning, found an unexploded giant cap. We made a thorough search and found small pieces of giant powder scattered all over the yard, enough to make a piece 28 inches long, and two more caps, which we had driven into the ground in punching over sheets, etc. Why they did not explode the first time is more than I can explain; and the second time! Well, someone else would have handed in this experience, if they had.

Aside from the loss of about 20,000 feet of gas, the cost of repairing was about $15.

We were never able to find the person or persons who were so kind (?) to us; but think it was one or more of the numerous burglars that were "working our town at the time."

No. IV.—This experience is certainly an interesting as well as an instructive one, and the sender certainly deserves congratulation upon the victory which is here recorded:

I am in receipt of your esteemed favor of the 1st inst., requesting something for your experience department. Now, when I say, that for the past 8 months I have been engaged in an effort to obtain a renewal of our franchise, on terms which would justify us in continuing business, I most humbly admit that I have had an experience. When I was not engaged with the franchise and the City Council, in order that my circulation should be kept up to what is required in a gas man, and to change the monotony of things, I have also had the pleasure and "experience" of working as a stoker in our retort house for the period of 48 hours, which was just long enough to prove to the stokers then in our employ that, stokers or no stokers, we would make gas just the same.

But all this is in passing. I only propose to give my experience as a stoker for 48 hours, necessitated by our refusal to accede to the unjust demands of our men working for us at that time, but who now are seeking fields and pastures new.

To make a long story short, our stokers demanded an all-round rise of $10 per month, and gave us just 1 hour to decide, which, of course, to a gas man is long enough for him to decide on his course. In that interim of time I had purchased overalls, put on a cap and an old pair of shoes; my cashier, two fitters, Welsbach man and janitor had done likewise, and we were ready and eager for the fray, perhaps. Fortunately, our foreman did not join the strikers, and we 6 arrived at the retort house a few minutes before the change of shift—viz., 5:45 P.M. Our appearance was somewhat unexpected by the gentlemen. They were informed their services were no longer required, and they walked out very quietly, although with a sort of you'll-be-sending-for-us-pretty-soon look on their faces. Now we were alone, but we had nearly an hour to get used to things. Say, did you ever try the "uppers" as a first experience in stoking? I don't know whether I was first or last hand. I rather am of the opinion we were all men, but I know after the foreman had knocked off the lids of the uppers I grasped the rake, inserted it into the retort, buried the point deep into the charge and pulled. Why didn't the charge come out? "Come here, one of you fellows," says I. "Say, Gunn, look at your gauge!" "Which one, sir?" But, oh, those uppers! They were most obstinate. I don't think we pulled out much coke the first haul, and I remember that once or twice the rake slipped on to the floor. I know we had lots of sandwiches and coffee and had a regular good time between drawing charges. I know that all the coal didn't go the way we intended—somehow we hadn't the knack; but we made the gas all the same, although I believe the yield went down a bit, and the time for charging came round rather too quick; and, altogether, without going more fully into the ups-and-downs of the two days' amateur stoking, although we all ached in every limb, especially the writer's arms, I felt amply repaid when, at the end of that period of time, we had gotten new men in their places, and absolutely refused to entertain any proposition having for its purpose the reinstatement of the strikers. And to-day not one of them is working for us.

I don't know what you call it, but it is an experience of which I am now glad, and recommend it to any gentleman suffering from dyspepsia in any form. It is a sure kill or cure.

No. V.—*A Valuable Suggestion Concerning the Purchase of Low Gravity Oil.*—It has been some years since I left the active detail work of the gas plant to engage in the crude oil business. I never felt that I strayed very far from the fold, for the gas industries have always followed crude oil as fast as it developed, and nearly all gas men are good oil men.

The oils of the lower gravities have always carried the lowest first

cost. With the advent of the apparatus for the manufacture of gas with low gravity crude oil came the momentous question to the gas manager of supply and contract covering same. By low gravity we mean an oil of less than 14½° B., at 60° F.

It has always been a question as to the advantage gained by the use of a very heavy oil by plants which are not equipped for steaming and handling same, as the cost of handling and demurrage on very heavy oil is very apt to offset the differences in first cost.

Since an oil of less than 14° B. will continue to be purchased, experience has shown that the buyer should be careful that he stipulates the maximum percentage of water which he will allow, and that all rebates to cover same include the freight paid upon the water. In cases where the oil is shipped long distances, and freights are correspondingly high, the transportation charge is often 5 or 6 times the original cost of the oil.

While the producer is conscientious in his endeavor, and in most cases succeeds in ridding the oil of water, yet where the oil is of a very low gravity it approaches the gravity of water so closely that the difference will not readily permit the precipitation of the water, and the result is that small globules of water are held in suspension. After the car of oil has been jolted over several hundred miles of track, and subjected to continued steaming in the consumers storage tanks, water in considerable quantity manifests itself.

No. VI.—Also of a technical character and will undoubtedly prove of benefit to many of the members:

The effect of one drop of oil tar over a surface of water is, no doubt, known to all. What must be the result if the continuous overflow from a tar separating system, which contains some tar that is lighter than water, and cannot be made to settle, is allowed to run into bay or river? What is the result on your purse, when this valuable by-product is left to waste, while oil tar has a market value of $3 per barrel?

My experience has shown that with a system of filtering every trace of this lighter tar can be removed and saved. A filter box containing 2 tons of screened generator cleanings will clear the overflow water which has been used in the manufacture of 15 million cubic feet of gas.

Since the burning of clean anthracite screenings or cleanings in the boiler is very slow, tar soaked cleanings greatly increase the furnace temperature, and more fuel is burned per square foot of grate.

The first filter I designed for the Portland (Ore.) Gas Light Company, about 7 years ago, which entirely cleans the water overflow from the water gas separating system.

No. VII.—One who honored us by his presence at our last meeting (Mr. Wm. McDonald, of Albany, N. Y.), and proved himself a most genial gentleman, has the following to say:

The only thing I can say to you is that I recall my visit to the Pacific Coast last summer and my meeting with the Pacific Coast Gas Association with very great pleasure. It has been my good fortune to attend very many meetings of Gas Associations in this country, and one in Paris, and I want to say to you that the freedom and good fellowship I found in the Pacific Coast Gas Association exceeded them all. I was rather startled at times by the freedom of discussion in your meeting, but believe after all it is the best way, and that freedom of discussion brings out more of real interest and benefit than can be brought out by a more conservative course. Especially do I remember the remarks of our friend Martin, when he told the Association that they would have to take his electricity whether they liked it or not, as if they did not he would give it to them anyway.

Sincerely trusting that you may have a meeting of great profit, and that you may all have a real good time, I remain, sincerely yours, Wm. McDonald.

No. VIII.—That gas companies are at liberty to charge for meters set in the name of individuals who do not consume a sufficient quantity of gas to warrant the expense of placing and maintaining meters, has been proved by a recent legal experience of the Capital Gas Company, of Sacramento. The case was Smith vs. Capital Gas Company, and the decision of the Superior Court in favor of the Company was affirmed by the Supreme Court of the State. The following official report on the case will, perhaps, be interesting:

Action for liquidated damages in the amount of $1,300 for refusal to supply plaintiff's house with gas (Sec. 629, C. C.). Plaintiff notified defendant to supply him with gas, and defendant refused to comply unless plaintiff would furnish a meter or agree to pay defendant 50 cents a month as rent for a meter. This plaintiff refused to do. The lower court found that the rent demanded was "fair and equitable," but found also that defendant had no rule requiring payment of rent for meters, nor did it charge its other customers therefor. The defendant had been supplying plaintiff with gas, but the plaintiff had used electric lights almost exclusively, and the total amount of gas used on the premises in a year amounted only to the value of $1.75. The defendant, therefore, had removed the meter.

There can be no doubt of the right of gas companies ordinarily to charge for meters, but plaintiff contends that defendant arbitrarily discriminated against him. There was no discrimination. Ordinarily compensation for the meter is received from the return of the gas consumed. But the value of the gas consumed during the year preceding the removal of the meter was not equal to a sixth part of the annual expense of the meter. The plaintiff's written demand did not specify even in a general way the amount of gas consumed, or even that he required more gas than he had been in the habit of using. The defendant was quite justified in supposing that he required n omore.

The plaintiff's case is unique, for there is neither finding nor allegation that there were any others in the same category, and if none then there was no discrimination.

Recognizing the value of this decision, our Company has established a uniform meter rent throughout the city of 50 cents per month on all meters which do not register an equivalent monthly consumption.

No. IX.—A wonderful tale is told in the following letter, recently received by one of our members: Dear Sir—I learn that you are about to establish a gas plant. If so you may be interested in a gas which cannot be exploded and which is not poisonous.

A friend of mine has lighted his house several years by gasoline gas, which he makes non-explosive, and if breathed continually will not injure anyone. He uses it in lamps and also conducts it from a small tank in the attic to the gas fixtures. It gives a beautiful, steady light and costs less than kerosene.

To light a town or city the streets and houses will be piped the same as for ordinary gas and the gasometers put in the same. Pour in the fixed gasoline and the work is done. No fires or coal or gas or smoke or dirt; very simple, as you see.

The cost of fixing is ⅛ of a cent a gallon. I do not know the cost compared with coal gas, but if it costs less than kerosene it must be cheaper than gas. If the parties using it manufacture it it will not cost quarter as much as coal gas.

This gas covers all the bad points of coal gas. It cannot be exploded if you want to explode it, and it is non-poisonous. This is no fake; everything I have written to you is true. I shall be pleased to hear from you.

You may ask why it has not been adopted here. If you knew the opposition of the lighting companies here you would not ask that.

My friend also deodorizes the gas. You see he has a perfect thing in the way of gas for lighting purposes.—Yours truly, X. Y. Z.

This closes the list of experiences for the present session of the Association, and I trust that a few of you at least have derived some benefit from their presentation.—R. P. Valentine.

Discussion.

The following discussion then took place upon the experiences related.

Mr. Lowe—I would like to know from where experience No. I. comes?

Mr. Aldrich—That must have been somewhere over in Alameda. I think the President can tell us about that.

The President—That was my experience, and that is the reason I desire to know if there is any remedy for it.

Mr. Lowe—Do you mean to say you had a tank frozen so it could neither go up nor down?

The President—The walls on the lower edge of the holder were imbedded in blocks of ice. The ice formed on the inside of the tank for half an inch or so, continued right around the wheels and increased as the cold weather increased.

Mr. Lowe—Is that an unusual experience with you in your country?

Mr. Aldrich—I suggest you had not been making any gas for about 3 months. That is another of the evils of running an electric light and gas plant at the same time.

Mr. Lowe—The reason I asked was because I was not familiar with the fact that you had sufficiently cold snaps in the north to give you such trouble as that. In the East in the winter we sometimes get down to zero and even below, and this same difficulty is frequently met with. My practice has been to use a jet of steam pointed tangentially with the holder so that a very small amount will keep the entire body of the water in motion and keep it just above the freezing point at very slight cost.

The President—Heretofore we used a stream of hot water dripping into the holder all the time.

Mr. Lowe—I think the best way is to regulate the heat of the water, and a very small amount of steam will do it.

Mr. Britton—I suggest that he might buy some of my $7.90 stoves.

Mr. E. C. Jones—A good test of the efficiency of Mr. Lowe's plan is to put a little chip of wood on the water, and if it entirely encircles the holder it will be a good test of its efficiency.

Mr. Valentine—I think Mr. Jones can give something in that line by his experience in Boston, Mass.

Mr. Jones—At the South Boston Works, of which I had charge for years, all our holders were inclosed in buildings. Hot air was carried in through the wall of the house and a very little coal did the work. But in the outside holder it is necessary to use a very small nozzle, have it pointed at an angle so as to keep it circulating around the cups and around the tank. You have no such weather here, of course, as we have in Boston, where you have to get a gang of men out in the night to shovel off the snow on the gasholders to keep them from upsetting when the snow is drifted on one side.

Mr. Lowe—What became of the gas if it failed to go into the holder?

The President—It did go into the holder.

Mr. Lowe—There was back pressure, then?

The President—Yes.

Mr. Lowe—How did you supply the consumers?

The President—There was no difficulty at all; the supply of gas continued to run through it.

Mr. Jones—I think that the experience of Mr. Aldrich (as related in Experience VI.) as a stoker is an excellent one. I believe it would be a good thing if more gas men knew what their men under them were doing. I believe if the gas man started at the bottom and learned some of these things, tried out his muscles, and found out a proper days' work for a laborer, a bricklayer, a carpenter, a blacksmith, sharpening tools, and the difficulties and hardships of workingmen, digging into holes and tar and that sort of thing, rendering them unfit to go out at night after reaching their homes, with their clothes full of naphthaline, it would stimulate in the minds of managers a sympathy for their men. God knows I have always sympathized with men working under me, for I have worked myself, and I think it is good for a man to know what it means to work, and to appreciate the handicap of the laborer.

Mr. Lowe—There has just been organized in San Francisco a Gas Makers' Union, and we are all watching it with considerable interest. I think the best solution of the labor difficulty under any circumstances is the studying of the laborer's interests. Sometimes their demands are unreasonable, but I am inclined to think if you offer a working man a reasonable solution of a difficulty he is very apt to accept your terms. Sometimes their conditions are exceedingly unreasonable, and that may have been the case in this instance. Personally I have never had a moment's labor-trouble in my life. In regard to Experience No. V., it was at the meeting last year I called attention to the fact that any oil seller will very gladly insert a clause in a contract limiting the presence of water or any sedimentary deposit to 1 per cent., and I think there would be no objection to inserting it even in an existing contract, as it is a customary clause. I will call your attention to one thing which very recently arose in my own experience. In making a contract for oil the oil concern inserting that clause said that the oil should be not less than 14° B. at 70° F., while it is quite necessary that it should be 60°, the standard temperature. It was a wee bit of a trick, and it is well to bear it in mind. It is the first time I ever ran against anything of the kind, and that might possibly have been an oversight. I accidentally discovered it in the contract.

Mr. Valentine—I don't think so. I ran across very much the same thing. They would not change the temperature, but I raised the gravity to 17°.

Mr. Osborn—As to Experience No. VI., it is very important to some of the plants throughout the country that they should get all that oily matter off the water before it goes into the creek, or whatever we are draining into. The filter is the only thing that will do it. Now, the best way to filter is the question.

Mr. Valentine—The author of this is not here.

Mr. Poole—That applies to coal gas alone; does it not?

Mr. Valentine—It is water gas.

Mr. Lowe—Experience No. VII., is a very complimentary one. I think this Association should reply to Mr. McDonald's letter, thanking him for his kindly expression and telling him we hope we will see him again. I move that the Secretary reply to him in that spirit in the name of the Association. [Seconded and carried.]

Mr. Lowe—I think—I am not quite sure—I received a communication of that kind, and I am inclined to think that the party who is fostering this scheme referred to in Experience No. IX., applied to me for a professional opinion on it. I did not know it was in the nature of an experience. I declined. But I have run across so many of those things in my time that I did not imagine they were experiences any longer.

Mr. Valentine—I will state that this was handed in by one of the members, and I was requested to read it. I don't know that it should go as an experience.

Mr. Lowe—No; I am not criticising it at all; but we meet with so many of those things that I thought it had ceased to be an experience.

Mr. Jones—Once in Boston I was called in consultation with Mr. Edward Atkinson, who is well known. He was at the time, and, I think, is still, head of the Board of Underwriters, and he called this same machine a "he devil." It was brought into the ante-room for him to examine, and he said, "Where is the he devil?" I think that describes it very well.

Mr. Valentine—I brought this matter referred to in Experience No. VII. up, because I thought it would be a good proposition to discuss the idea of all companies charging a meter rate.

Mr. Lowe—In reference to that experience, I want to know what you would do—suppose a man used 40 cents' worth of gas, what do you charge him for the meter?

Mr. Valentine—10 cents.

Mr. Lowe—That has been my practice for a good many years past. You charge him the difference, whatever it may be?

Mr. Valentine—Yes.

Mr. Lowe—I think a very excellent method, and I have always adopted it. I think, too, we can make it a dollar without any detriment to our consumers at all.

Mr. Valentine—We always charge 50 cents when we make out a bill, and if there has been no gas used, then on the bill it says, "Meter rent, 50 cents." If they only use 100 feet, then it is 17½ cents for gas, and the balance for meter rent.

Mr. Lowe—I think it very wise to observe conditions under those circumstances. Some consumers will burn nothing for two or three months when they are away, and burn considerable during the balance of the year. Under those circumstances I think it better to say nothing about the meter rent.

Mr. Valentine—We have our consumers understand if they are going to leave town they should order their meter out, and we are always glad to remove it for them. A great many people keep the meters in just as a safeguard in case the electric lights go out. In the winter time they may use the gas for heating and in the summer time not at all. Still they keep the meter there; and in the summer time, when they are not using the gas, we charge them the meter rent just the same. Then there are some people who do not use any for heating and do not use gas in the winter time, but do use it in the summer time for cooking.

Mr. Lowe—Suppose you had a customer who used an average of $25 worth of gas a year, and another who used $50 worth. Suppose the $25 man used it continuously, about the same amount each month, and the $50 man used it all in one month. Do you think it would be fair to charge the $50 man 11 months' rent? Do you think it fair to the consumer?

Mr. Valentine—I think so. We have not made any enemies by it yet.

Mr. Lowe—I cannot see it in that light.

Mr. Keyes—I adopted the system a few years ago of making the minimum bill $1, and we have never had any trouble, although we are in competition with a company that charges only 50 cents. It is stated on our bill that the minimum charge is $1 a month. I don't believe out of our 800 consumers we have had five who have made any complaint. When they are going away from Sacramento to spend two or three months at the seaside they notify us they are going away, and if we do let the meter stand we do not render any bill, but we do for those who burn very small amounts. I think if this charge were the rule it would be a good thing. I have found it very satisfactory, and I have been trying to get Mr. Valentine to adopt the same rule. I think if the companies would all adopt that rule they would find their receipts would increase materially without any inconvenience or opposition from the consumer.

Mr. Aldrich—Do you call it a minimum charge, or a meter rent?

Mr. Valentine—We call it a meter rent.

Mr. Aldrich—It seems to me very objectionable to call it meter rent; but I think you should have a minimum charge. It costs as much to read a meter for no consumption as it does for 10,000 feet consumption. We are prohibited in our franchise from charging meter rents, but I have got around it by making a minimum charge of 25 cents a month.

Mr. Britton—It seems to me the gas companies operating electric light plants open themselves to the charge of inconsistency, because the custom exists in this case of charging a minimum rate for electric meters. I think it has been fixed at $1 in all communities. I know we charge $1. Some smaller companies charge $2 per month. I have never seen any reason why the gas company was not entitled to some consideration for its investment. True, the installation of the electric meter with its transformers makes a larger per capita tax on the company, and the proportion of $1 to 50 cents seems to me to be equitable, and if it could become a universal custom, backed by this decision of the Supreme Court, I do not think there would be much remonstrance from consumers. Where you are supplying them with both electric lights and gas you are under some obligation to supply them with light, and if there is an inconstant service there should be some means of supplying them with other light. That is one of the things I am up against, having something of an inconstant service at times. Therefore, I have not had the heart to tax the consumer much. But it is an equitable proposition, and I believe I will adopt it. It used to be in vogue. In fact, years ago we used to charge for placing a meter. We had a charge of $2 for every meter that was sent out, which was paid without any murmur. That was abandoned as the business grew, as well as for the removal of a meter from one place to another; when a consumer moved there was a charge of $1, which I think was fair.

Mr. Martin—Where we were depending entirely on water power, notably in Woodland, one of our towns, we have taken out quite a number of gas meters that were set initially for protection against inconstant service, but the service was such that they refused to pay the charge on the gas meters. I think the company is entitled to a fair rate of interest upon its investment that is lying idle, because it is there for the convenience of patrons. There is an advantage, too, that where a man has to pay $1 he will use the dollar's worth of gas if he can, and probably more.

Mr. Keyes—Our bills are not rendered as meter rent. It is understood that it is a minimum charge. It is not on the bill at all. We have in red type that the smallest bill rendered is $1 a month.

Mr. Lowe—The term I use is "Service charge." That applies to the general service, just as a café has a minimum charge covering the price of any check, depending, of course, on the character of the restaurant. One dollar is the charge we have adopted.

Mr. Valentine—3½ cents to the 1,000 feet of gas manufactured is the return which we receive from meter rental. That was the maximum of any one month.

Mr. Osborn—I think to put it in the form of a meter rent to a consumer is objectionable. To solve that question all you have to do, if your charge is, say, 25 cents per 100 for gas, or $2.50 per 1,000, is to charge them for an arbitrary reading on their meter of 200 feet. We are then reading the meter in advance 200 feet and charging 50 cents, and it promotes the use of gas. It makes a great difference to the company. We are simply collecting for the gas in advance, and it is one way of getting around meter charges and still having a minimum rate.

Mr. Hollidge—There are persons here who are operating electric plants in connection with gas, having flat rates, where the meter is left in in case of a fuse blowing out, or anything happening to the transmission lines or generators, which would cause the electricity to be shut down for a little while. I would like to know if any of the members present are in the habit of charging for meters under those conditions.

Mr. Valentine—Yes, sir.

Mr. Martin—That is our policy. The basis of rates determined is on the basis of the service we can give them, and if we are unfortunate they must join with us, because we are making lower prices than they would get otherwise. We might be perfectly willing to furnish them with gas during the interruption if they would pay higher rates, but we have adopted the policy of extremely low rates, both gas and electric, and they must be satisfied with the best service we can give them.

Mr. Hollidge—I would like to ask another question. If such a thing should be that you should have any accident to your line, and you should be shut down for a night or two, for instance, what would you do under those circumstances? Something happened to the dam of the company that got in their transmission lines above us, and they took the water from the river for about a couple of days, and we had to light up with steam. Of course, we were caught the first night, but not the second. It was too late before we got the news. Now, I would like to ask where consumers have not had the opportunity to use the electric light on account of trouble, if any person here charges them for the gas then used.

Mr. Valentine—Yes, sir.

Mr. Martin—The usual method, if the interruption is serious and any complaint is made, is that the collector is authorized to make a deduction, but the gas he pays for as he uses it, or he pays his minimum bill anyhow. I know one case several years ago where we had a serious interruption involving a town in darkness for 36 hours. Very few complained, but where they did the deduction was made, and out of a total of about $2,500 collection, about $10 or $15 was the maximum deduction made during the month. Generally they are very reasonable, but if we find a man who makes the demand we always concede it.

Mr. Hollidge—I understand you make the reduction for the electric light they did not use, but charge them for the gas?

Mr. Martin—That is right.

The President introduced Mr. M. C. Osborn, who read the following paper on

DIFFERENTIAL GAS RATES.

I have been requested by our President to bring out in a paper what I could regarding the equality, or rather what would be considered good business, in having a differential rate or a sliding scale of prices for gas.

So much has been said on this subject that it would appear there was nothing left to say; still we have made such rapid strides in the economies of manufacture, distribution and sale of our product that these must necessarily affect its scale of prices. In connection with rates for gas it will be necessary to review the gas business from the early days of uniform to a sliding scale, and oftentimes ruinous rates, to the present time when conditions are more settled and rates more uniform.

In the pioneer days of gas distribution, particularly on the Pacific Coast, the management of gas properties had a steady output every night; this was during the period of high prices, and they did not at this time consider a differential rate of prices based on a differential scale of consumption. All the consumers paid the same price per 1,000 cubic feet, without regard to the amount used, the management considering that the business which could afford a consumption of 10,000 cubic feet could afford to pay the same rate as his neighbor in the same business who consumed 1,000 cubic feet; and, for argument, I will say, was good business. The 10,000 cubic feet consumer reduced the cost of production, as it reduced the cost of labor in manufacture and per cent. of leakage, and the office expense was less in proportion. Still, our liability was increased in being required to furnish storage and main capacity 10 times as great as we did the small consumer, so that the advantage gained in the first instance was thought to counterbalance the other, so that uniform rates remained in vogue until competition in the shape of cheap oil and high candle power lamps entered the field.

It was about this time that our best consumers—that is, the business houses—began the early closing movement and consumed light on Saturday nights only. This I consider was the most serious blow the gas business ever received, and very materially affected our rates. Here we were suddenly confronted with the fact that, with the same plant, and practically the same expense, our output was reduced to one-sixth of the plant's earning capacity, and we still had to be prepared for a full or peak load on Saturday nights.

It was about this time that the necessity for a differential rate began to assert itself, although the conditions had changed so that the cost of manufacture had materially increased. The gas manager who had been doing a safe business, confining his observations and study to the retort house, now began to stir himself, and for the first time turned his attention to the business end of his affairs, endeavoring, by differential scale of prices, to offset cheap oil, high candle power lamps and the early closing movement.

I suppose many of us about this time gave flat rates for gas to hold our consumers, which might not be called a differential rate. The fact developed, however, that there was a great difference in the rate received per 1,000, and taught us to measure out our product and allow discounts to the consumer according to amounts used; or, in other words, we had to meet the difference in price between the relative cost of a can and the cost of a drum of oil.

We had no sooner adjusted ourselves and our rates to meet the new conditions when the arc light entered the field as a competitor, and for a time caused alarm in the gas fraternity. In some cases this competition caused managers to adopt rates that proved ruinous to the business. The arc light, however, did not prove so much of a competitor, owing to its cost of production. It did prove to be a powerful educator to the public in the use of light, and promoted rather than diminished the consumption of gas for illuminating, so that rates were not materially changed.

We all know with what delight the gas fraternity hailed the advent of the Welsbach burner, and for a period it was Rochester oil burners

and the arc light on the one side, and gas with the Welsbach burner on the other. Except in the larger cities, where the field for development was practically unlimited, and in a measure compensated for the reduced consumption its use involved, the Welsbach burner did not prove to gas companies the commercial success claimed for it, and was a new phase affecting the rates for gas.

With high candle power oil burners and the arc light, both of which furnished a concentrated light, left a field for the gas man who in all cases brought the Welsbach burner to the front, in each case reducing its consumption, thereby increasing the cost of production. With our schedule of rates at bed rock, there came the incandescent electric light, which was found to be practicable for any degree or form of lighting, and threatened the existence of gas properties. It is pleasing to note that the manager was not long in seeing the advisability of adding to his interests the sale of what formerly had been his competitor. At this period we begin to see a more uniform scale of rates. As gas men we had no more than become accustomed to the rapid revolving of engines and dynamos, the distribution of our product by wire overhead rather than the gas mains beneath our feet, than a new competitor enters the field in the shape of the long distance transmission of electricity, which generated as it is from natures resources, enables its producer to furnish us with power at a less rate than it can be done by any other means. With this combining of interests, we become greater in capacity, ability and efficiency. I believe that the different power companies throughout the country have done more to establish uniform rates than the introduction of any other event in our history.

Having arrived at this stage, where we are producers of both gas and electricity, it might be well to treat them as one. In establishing our scale of prices it is first necessary to find the amount of our fixed charges, which remain about the same no matter what the output may be; the maximum output, or peak load required, must also be considered. At this point it might be well to consider the position of our manager of to-day and the one at the beginning of my paper. The manager of to-day reaches the masses, thereby reducing his fixed charges, which fact affects his rates. The manager of 20 years ago, who piped his district for business to the classes, did not reach the remunerative business to be found to-day. The rapid development of electricity, and its adoption by the masses as a means of artificial light, have caused the manager to seek a new field for his gas interests. I need not remind you that "Gas for Fuel" and "All Solid Fuel Must Go" is all the watchword for all interested in the business. To get this business we must have a differential rate, or it might be better expressed by saying that as we are now in a new business there must consequently be a new rate—I feel it is not a differential rate in the sense to which the term is applied in this paper, but an entirely new business, so requires a new rate.

The manager at the beginning of this generation sold nine-tenths of his product in 4 hours per day, requiring large storage and distributing capacity. While the same plant has 4 times the output, and, I might say, earning capacity as gas is sold to-day. If the time earning capacity of your plant is increased fourfold it affects your rates. Rapid progress has been made in the last few years in educating the public to use gas as fuel. Much remains to be done, and the main object of the manager is to increase his output, which reduces his relative cost and so affects his rate.

In entering the fuel business we have, perhaps, entered into a broader field of competition than in the lighting business. We must be prepared to meet the competitor who uses gasoline by the gallon, the 5-gallon can, the drum and the carload. There is a differential rate on these goods. I ask you why should we not compete?

I believe in a rate in the fuel business for consumption, thereby reaching the consumer. In fixing rates the probable output must be considered. When gas for heating becomes as practicable as it is for cooking to-day its use will become universal, and the manager a few years hence will count his output by the millions as we do our thousands per day. What is a good thing to-day will be ancient history to-morrow. I believe in uniform rates for both gas and electricity for light, as there is a limit to the use, as it places all of our consumers on an equality; but the manager who has a uniform rate for light and fuel will, in my opinion, get lost in the procession.

Our position in the distribution of gas for fuel is parallel with water companies who have a differential rate to meet the competition of private ownership of isolated plants. If the water company should be called upon to deliver four-fifths of its output in one-sixth of the time now demanded by the public, as is demanded by consumers of gas and electricity for illuminating, it would involve the doubling of its distributing system and storage capacity, and would affect the rates very materially; and for that service rates would be more uniform, as the cost of service is greater. Perhaps the most striking illustration of why there should be a differential rate between illuminating and fuel gas, is to ask you what you would have to do if you were called on to deliver four-fifths of your present output, as it was delivered a generation ago?

I wish to say in addition to this paper that there is a gentleman connected with this Association who is from Spokane. He came into the office of the Secretary, and in picking up what he could find, picked up my paper, and he has notes on this paper which run into more reading matter than the paper itself. I want to have him open the discussion on it after lunch.

Some Desultory Matter.

Mr. Aldrich—Before we adjourn I would like to have something to say as to the Editors of the "Wrinkle" and "Experience" Departments. I do not think we pay sufficient attention to those departments. I am under great obligations to the Editors thereof, and also to the eminent engineers here who have given us the benefit of their life studies. Mr. Britton introduced a wrinkle here two years ago that brought me in lots of business which otherwise I could not have secured, and Mr. Lowe kindly sent me his paper, when I was trying to secure the lighting of a big building, showing me the scale of charges of electricity in comparison to the cost of gas, enabling me thereby to get the finest building in Spokane. So you see I speak from experience. I think the trouble here is we do not pay sufficient attention to details, to the little things, to these many little labor-saving appliances that tend to give us a good night's rest. I think we should take these wrinkles home and give them to the men in our shops. I think if it costs $10, $20, $30, $40 or $50, we should experiment with them, and if we find they are practical we should adopt them. I do not know how many do it. I am afraid I have not paid that attention which I should, but I will attend to it in the future. There can be no doubt that these wrinkles are very valuable and tend to make the life of a gas man much more bearable. I have much pleasure in moving a hearty vote of thanks to the Editors of the Wrinkle and Experience Departments. [The motion was seconded and carried.]

Mr. Britton—As there are some few moments before the luncheon hour, we can well afford to spend them, not in the discussion of the last paper, or the one by Mr. Symmes, because I expect to talk quite at length on both of them, but in the presentation of reports of committees, and the consideration of such other little details as might present themselves. With your permission I would like to read the following

Report form the Committee on President's Address.

To the Members of the Pacific Coast Gas Association: Your Committee on President's address, after due consideration of same, beg leave to report:

That its contents are worth the careful consideration of each member, particularly the compilation of statistics showing increase of sales.

We commend the recommendation concerning the establishing of headquarters, believing this action will be to the immeasurable advantage of members.

Also commend the suggestion for the appointment of an Advisory Board; both of these matters to be considered at the present meeting.

We recommend that a committee be appointed in accordance with this suggestion, in the matter of a gas and electric commission.

We congratulate our President on the success of the Tenth Annual Meeting of the Pacific Coast Gas Association, emphasizing, as it does, the assured prosperity and future success of our Association.

Respectfully submitted, Jno. A. Britton, Chairman, W. A. Aldrich, J. W. Wilson, } Committee.

On motion of Mr. Martin the report was received and adopted.

Amending the Rules.

Mr. Britton—I would like now to bring up the resolutions which I read yesterday, amending the Constitution and By-Laws.

[The Secretary read the resolution heretofore offered by Mr. Britton, amending Article III. of the Constitution.]

Mr. Britton—Under the rules of the Constitution that must lay over until the next annual meeting.

[The Secretary read the second resolution proposed by Mr. Britton, amending Section I. of the By Laws.]

Mr. Martin—I would like to ask Mr. Britton if it would not be wise, in order to remove any question as to when dues are payable, to add: "All dues payable in advance." That will save any question."

Mr. Britton—The succeeding clause of the By-Laws provides for that.

Mr. Lowe—What is the idea of limiting the membership to four?

Mr. Britton—There was no idea except that one of placing a limit, as is usually the case. I do not think it would be advisable to have an

unlimited membership from any one corporation. It seems to me the proposed by-law amendment is plain enough in its character. It was discussed at an informal meeting of some of the members on Monday night, and at a meeting of the Directors held subsequeutly. It occurred to us at that time that interest might be had in the Association by corporations engaged in the gas business to a greater extent than now. It may be true that very many of the members of this Association are representatives directly of the corporation, and the dues of those members may be paid for by the corporation; but there is a certain pride in membership in this Association now, owing to its long and successful life, and it occurred to us that the corporations whose men attend these meetings should have enough of interest in its future to provide in some way for its life other than through the individual efforts of the men employed by the corporation, and if they can be made to see it in that light—and I am satisfied they can on proper presentation by the Secretary of the intent of this by-law—they will become contributing members. The people whom they may be pleased to send here for their own advantage and education will not long remain as non-representative members. They will be permitted to participate in all deliberations as far as the discussions go, but they will have no voice in the proceedings, nor will they be privileged to hold any office. It is to be hoped and believed that such men as come here as representatives of the corporation will by reason of the associations they make here become so imbued with the necessity of putting themselves upon a par with those who have active membership and have a voice in the proceedings that they will themselves take out from time to time individual membership in the Association and make themselves active members, thus greatly increasing the financial end of the Association, and doing themselves more good than they could possibly do in any other way. That the corporations of the State will become contributors there is no doubt. We have promise already of a number of corporations who will become at once members under this clause, and it affords an opportunity for additional membership that never has been afforded before, and keeps this Association on its particular personal plane, such as is occupied by no other Association of its kind in the United States or in Europe, in that we have no distinguishing conditions of membership. Every one who joins here, whether he is an active gas man or a man engaged in a business allied with the gas industry, stands upon the same footing. It is as fraternal an organization as any that exists, and we intend to keep it so. The charter members do not care to draw the lines in any different manner than they were drawn 10 years ago, but this affords a proposition of associate membership leading up to a permanent one, which we hope, we know, will be the case. Personally speaking, and for those who have discussed this question with me, I am in favor of the amendment. (Applause.)

Mr. Hollidge—The idea was to limit the associate membership to people engaged in the manufacture and sale of gas.

Mr. Britton—Yes; anybody outside thereof is ineligible as a regular member. It is only to afford the corporations engaged in the manufacture and sale of gas an opportunity of sending more representatives than they are sending now, if they so desire.

Mr. Martin—One of the objects of the changing of our By-Laws and Constitution to admit of associate membership, as outlined by the resolution, was for the purpose of permitting corporations engaged in the manufacture and sale of gas to contribute somewhat to the financial necessities and requirements of this organization. The corporations, as corporations, receive the benefits that are transmitted by this Association to their employees, and if they have no means of contributing, except by voluntary contribution, they might be misunderstood. Corporations might be perfectly willing and anxious to assist the Association as corporations, and yet at the same time would not like to present a check for the amount they would be willing to pay as associate members, and at the same time the Association gets the membership and the corporations receive a *quid pro quo* by the education of their own employees and the economies introduced due to attendance at these meetings. Another advantage which was suggested is that the employees change. A new man may not want to become a member of the Association the first year. We do not know how long he will remain in the gas business; but if he comes here he will get acquainted, he will acquire knowledge, and he will not feel awkward. He will feel that he has a right to come as an associate member and as a representative of his corporation. It will do good in that way, and cannot do any harm.

On motion of Mr. Aldrich the resolutions as read were adopted.

In the Matter of an Official Organ.

Mr. Lowe—As most of you are aware, the official organ of the Pacific Coast Gas Association is the American Gas Light Journal. Our proceedings have been published regularly in that Journal, but to the utter exclusion of all other journals or papers allied with the interest. This is not the usual custom, but so far as we are concerned it has been a most excellent thing for us in the past, because the American Gas Light Journal has borne the expenses of the proceedings. We have had our official stenographer, but they have paid the cost of the services which he has performed. We have been benefited to that extent, but we have suffered because of the fact we were represented and known only to those who read that one paper, the American Gas Light Journal. There are now two other journals devoted to the lighting industry in the East, and on the Pacific Coast there is a very excellent publication, known as the "Journal of Electricity, Power and Gas," a paper published by Mr. George P. Low, who has become a member of our Association at this session. I think it would be a most excellent thing if we were to discontinue the American Gas Light Journal as our official organ, and sustain the expenses of our proceedings, giving to any journal who will publish our proceedings a copy of the record. We will be benefited greatly by so doing. I now move that this Association do away with the official organ (I will prepare it and present it to you later in a written form), and that in the future it sustain at its own expense the recording of the proceedings, giving a copy of the same to any paper that will publish them.

Mr. Osborn—A resolution was adopted at the fourth annual meeting appointing the American Gas Light Journal as our official Journal. Now, I think we should offer a resolution rescinding that resolution.

Mr. Lowe—Very well; it may take that form.

The Chairman—Is it your wish that it should take effect next year or this year?

Mr. Lowe—That is entirely a matter of courtesy. It makes no difference. I am perfectly willing to incorporate in my motion that it go into effect after this year. It would be rather more courteous. I understand Mr. Low has expressed a willingness and an eagerness to publish it.

Mr. Aldrich—I think we want time to digest that rather arbitrary resolution, and I move that the discussion of it be deferred till this afternoon.

Mr. Martin—As I understand the resolution it is to rescind the previous selection of an official organ, to take effect after this meeting.

Mr. Lowe—Yes.

Mr. Lowe's motion was duly seconded.

Mr. Aldrich—I move that the discussion of the resolution be deferred until the afternoon session. [Adopted.]

An adjournment was taken until 2 o'clock, P.M.

Second Day.—Afternoon Session.

The meeting was called to order at 2 P.M., and the President announced that the first business in order was the

Discussion of the Paper by Mr. Osborn on Differential Rates.

The President called upon Mr. Aldrich to open the discussion.

Mr. Aldrich—I think Mr. Osborn accused me of stealing his paper. He knows what he did, and he knows why I read it before the meeting. Ask him. I won't give him away. The discussion of differential rates of a charge for a commodity embraces rather a larger field than I fear we can give to it in the time allotted for the discussion. I wish Mr. Osborn had gone further into the subject, and had given us some idea of how he would adjust the conditions. He does not provide any panacea for the difficulties which we are called upon to meet, so I suppose it is best for us to draw our own conclusions from practical experience. Now, Mr. President, this being a Gas Association, I do not feel called upon to take the side of the electric man in this discussion, and whatever remarks I have to offer must be accepted as coming from a gas man, who knows very little of electricity, and it is from that view that I address myself to the question. The writer of the paper states that the Welsbach burner itself is not a commercial success. I do not know where he got that idea from, for I do not know what we would have done without the Welsbach burner. It is to my mind the only harbor which saved our little gas craft from total wreck at the hands of the Philistines, otherwise the electric light companies. He says that the reduction in the consumption of gas through the Welsbach burner has been such that it practically wipes out the lighting industry, and it has to find fresh fields. So, in California, where you have no cold weather, you have to find fresh fields in order to get rid of your surplus make; or, in other words, to increase the sendout during the day. I did not know, Brother Osborn, that gas for fuel was such a recent invention that we have to find practically new fields for it. I think it is a very old field. I think, as far as I remember, and that is a good

number of years, gas stoves have been in constant use, so I don't know why we have to look to new fields. It seems to me we have to provide ways and means of selling as much gas or more during the daytime than we did at night. Brother Osborn says the manager who has a uniform rate for light and fuel will get lost in the procession. I think when our brother comes to consider for the moment he will certainly accept the suggestion at least to put it in its mildest form, that it is a rather extravagant assumption in this meeting of representative gas men, and I do not think that he wants it to be given out that gas men, or the manager who advocates a uniform rate for light and fuel, will get lost in the procession. If he means a rate of $2.50 per 1,000 when his competitors are selling at $1.50, yes; he will get lost in the procession. If he is selling gas at a rate twice as much as electricity he will get lost in the procession; but on the other hand, if he is competing with electricity on the one hand he will find that he must bring his price down to such a rate as will successfully compete with the opposing force. If Brother Osborn continues in that train of thought, and exercises it in the responsible position which he holds to-day, I am rather afraid that Brother Osborn will get lost in the procession. (Laughter.) Now, gentlemen, what enables us to keep our accounts at a minimum? What is it that we bring to our aid to pay our fixed charges, in order to provide ammunition with which to fight "our friend the enemy"? I say that it is fuel gas. I say that when our company exists for the purpose of selling gas—and I don't care for which purpose it is used—I want to sell as much as possible. I do not want a man to use gas for fuel in the daytime and electricity at night. I want him to use gas first, last and all the time. Now, gentlemen, we have to consider the fact that the progress of gas has been very much greater than that of electricity. Electricity during the past 10 years has made very little progress. Outside of the incandescent electric arc I do not know of anything which has been done to revolutionize—if I may so use the word—the lighting industry. I venture to suggest, Mr. President, that the profits of the gas lighting business have far exceeded those of electricity. I say that with the modern and up-to-date appliances that we have for supplying lights, the progress has been so great that we care no longer for the illuminating power of gas. We are now rather looking to the calorific value of gas, and in it we shall find a panacea for all our woes. It is no news to any of you to hear that the Welsbach or the Kern burners do not require a high illuminating gas. You will get a better result from a 16 or 17-candle power gas through a Welsbach burner than you will if it is a high candle power water gas. So with that I feel sure that the march of progress of gas over electricity is very much more in favor of the former than of the latter. I think, with a well managed works, with the fixed charges at a minimum, with no water in the stock, a man ought to take a gas works and fight any electric light company that might come along. I do not intend to discuss Spokane at all. I am just confining myself to the able paper which was read by Mr. Osborn. But you all know that they do have 30,000-horse power in the heart of the city, and they do have the cheapest electric light in the United States; yet I don't care a snap of the fingers for them. Now, then, what is the reason? One reason, and I take it the principal one, is that in order to fight the enemy I have to find ammunition, and my ammunition is gas for fuel. Gas for fuel, if I were to lose every light consumer that I have, would pay all my fixed charges and a small balance besides.

Mr. Martin—Do you want that language published also.

Mr. Aldrich—I know it is a fact. That is all right. I don't want gas men to be dominated by the thought that some opposing electric trust or company is going to down them if they don't let them in. I want to say that, give me any gas company and a free hand, and you shall take your electric light company and we will see which comes off the better. We must go by results. That is what we have to do. Now, then, gentlemen, the heating business or the cooking business is a business which electricity cannot touch. They have a curling iron, or some sort of heater, and the President of the competitive company tells me it costs more for repairs than the thing is worth. That is a fact. We know all about that. Now, gentlemen, what shall this differential rate be? I say that the man who uses 1,000 feet of gas should not be charged the same per 1,000 feet as the man who uses 50,000 feet of gas. I say that you should differentiate your gas to a certain minimum; that you should charge for your gas as much in fair proportion as your competitor will allow you; but I also say that the minimum rate should be such as would allow you a reasonable return on your investment. In order to encourage the use of gas, I suggest, Mr. President, that a duplication of meters is thoroughly and totally unnecessary. I say it is not necessary to have two meters because you are supplying in one house gas for light and gas for fuel. Your troubles don't end with putting in a meter, because in 9 cases out of 10 on going to that house you find it is piped clear through. Where does the expense begin and where does it end? Is Johnny Britton going to put a lead pipe in for a $7.90 stove to pipe a house so they shall use his stove up in the bathroom or the second floor? Who is going to have a lot of pipes run over the ceilings? I want to suggest that you are revolutionizing the whole system of the erection of houses. Who wants to see an unsightly pipe strung over the wall or on the outside? We will go in for concealed work, and this it seems to me must be included in the architect's designs for the erection of residences. It seems to me that you can accomplish the same results exactly by instituting a system of discounts. I want to increase my daily sendout. I do so by pushing my gas stove business, but I don't want my gas stove business to cease at 6 in the evening, when I will have no more business until the following morning. I also want the business at night. I also want a night sendout. I want to compete with electricity for light as well as fuel. Now, then, that being so, I establish a system of discounts; that is to say, if I have a $2 rate for light or fuel—take your choice—if you will take a light and fuel rate, then I also charge you $2 per 1,000, but I take off by discount a certain percentage which will reduce the cost per 1,000 from $2 to $1.50, which will be the lowest rate at which I can possibly supply gas with profit. This avoids all duplication of meters, and in large companies, with large vested capital, I suppose a few thousands are not of much consideration, but in small companies I think that it avoids not only duplication of meters but a whole lot of other ills with which we have to put up. I shall conclude my remarks with this one thought. Mr. Osborn stated that four-fifths of the output was in one-sixth of the time now demanded by the public. Now, I think there was something wrong; that four-fifths of your output is consumed in one-sixth of the day I suppose you mean.

Mr. Osborn—Yes; we were speaking in relation to water works. They are now giving a 24-hour service. If they were called upon for four-fifths of that water in one-sixth of the time they would have to double the storage and distributing systems, which would mean more money to them, and, consequently, they would have to charge a higher rate.

Mr. Aldrich—I think that is a condition that should not be allowed to exist, and I don't think it does really exist, Mr. Osborn. I think in the companies south of here you will find that the increase in the day consumption is rapidly reaching a point where you will have to add to your holder capacity anyway, because it is only a matter of time when we will find gas stoves in every house in the land without a doubt. As Brother Martin expressed that a while ago, gas is no longer a luxury; it is a necessity. With these few remarks I want to compliment Mr. Osborn on the able manner in which he has presented his paper.

Mr. Martin—I am sorry I did not reach here soon enough to hear all of Mr. Aldrich's remarks, but I am afraid that Mr. Aldrich and myself, as well as a great many others, are very much like the streets of Boston, all pointing to the same center. The objects which Mr. Aldrich wants to obtain, and the objects which we all want to obtain, are increased consumption, and consequently increased profit. Now, I will discuss this purely and solely as a gas man, without any reference to the electric department in any shape, manner or form; not as to whether our competitor will allow us to get all we can, but with a view of getting all we can out of the gas business as a business. The California Central Gas and Electric Company, in its various plants, establishes two rates, one for illumination and one for fuel. The question at once arises: "Why?" The consumption of artificial illumination is a limited quantity relatively speaking. The consumption of fuel is relatively speaking an unlimited quantity. With gas in San Francisco at from 50 cents to $1.25, there is about an average of $16,000 worth of coal being consumed around the Bay of San Francisco every day of the year. If we could sell gas for 50 cents per 1,000, which is a higher price than the natural gas man sells gas, and at the price that the natural gas man sells gas no solid fuel can compete, so there is a point at which it will be consumed and wasted. That would mean 32,000,000 feet of gas a day more than is now being sold around the Bay of San Francisco, if you sold it at 50 cents per 1,000, assuming that 50 cents per 1,000 will take the place of all solid fuel for domestic purposes. Now, if the Companies in San Francisco were selling 32,000,000 feet, or even 25,000,000 feet more than they are now selling, or about five times what they now sell, their cost of distribution is one-fifth of what it is to-day, assuming that their mains have the proper capacity, there are certain hours of the evening when their maximum is probably 3 or 4 times the demand during other hours of the day or night, and if with that same installation you are able to use it for more hours of the day, so will you be able with a given investment to reduce the price of your gas and still make a greater profit. Now, the question presents itself in the abstract. Take a city of 5,000 inhabitants selling, if you please, 10,000 feet of gas a day all the year around for illumination (which is a better average than normal for a town of that size), that gas costs you, we will say, $2 per 1,000, the actual cost of your gas in the holder—the material alone might not be over 60 cents—if you please, you are capable of making 4 or 5 times as much gas, your collector and bookkeeper and all men are capable of doing 4 or 5 times as much work, so the only additional cost to you is practically that 60 cents per 1,000. Now, if you could sell gas for $1.50 for fuel, where you are compelled to charge $2.50 for illumination to make any profit, you are decreasing the average cost of your manufacture for every 1,000 feet of gas you put out in a gas stove or heater. So that, in order to build up the consumption with a given sized plant and during hours when gas is not consumed for illumination, it is particularly wise to reduce the price of gas for fuel purposes, unless you eventually reach a point where the price is so low for illumination that it will take the place at that price for all solid fuel being previously used. The question of meters is a small matter, relatively speaking; $10 at the most will install a meter, and if you had 1,000 customers it would mean $10,000.

Mr. Aldrich—Suppose you had 23,000 consumers?

Mr. Martin—I am taking this relatively, and the argument is all the greater in favor of the larger account. If you had 1,000 customers it would be $10,000. The interest or depreciation on that amount is fairly $1,000 a year, and if those consumers use $2 worth of gas a month, as the average gas stove will consume, you can readily see that, due to the encouragement of its use by its lower price than formerly and by its competitive price with other characters of materials other than electric illumination, the revenue is much greater for the capital invested than for any other one particular department of the gas business. You have to have a given-sized equipment for your maximum demand, and unfortunately in the illumination business that demand extends over 1 or 2 hours in the evening, and the balance of the time your capacity remains idle, whereas in this way you are utilizing that investment at no additional cost, relatively speaking, and you can afford and should make a lower price for fuel because the consumer for fuel purposes is a cheaper commodity than the consumer for illuminating purposes.

Mr. Britton—I have listened to part of the argument of Mr. Aldrich

and to all of Mr. Martin's. I do not think that either of them discussed the paper at all. I do not think they have sounded the note which will be the educational part for the gas man. They both have talked entirely from the standpoint of the manufacturer and his possible profits. It seems to me a question of this kind ought to be discussed from the standpoint of the consumer, as to what he thinks of it. Right here I want to say that I have always regarded our friend from Spokane as one of the ablest orators and exponents of the questions that came before us on this floor. I have never before had occasion to accuse him of inconsistency in any of his remarks. On the contrary, I have always upheld him during the years we have been associated, as one of the most consistent gas men that ever came upon this floor. But he has been guilty this afternoon of the most glaring inconsistency in his remarks that could possibly come from the mouth of any man, and, by his own argument, before this jury of men assembled to try him, he has already condemned himself. (Laughter and applause.) He has stated to you that he is not in favor of differential rates, or of any rate, and yet upon the face of that he stands here and advises you that he is in favor of it, that he does favor it, that he does give discounts for quantities, which plan is nothing more nor less than differential rating.

Mr. Aldrich—I refuse to be misquoted. I did not say I was not in favor of differential rates. The application was that which I combatted.

Mr. Britton—To come back to my original statement, that I believe this thing should be discussed from the standpoint of the consumer. The old gas men, and very many of the new ones by reason of contact, are possessed of old-fashioned ideas. Until the advent of the electric light it was impossible to arouse the gas men in any situation, no matter where located nor under what conditions, from the old way of doing business, from the retort house clean up to the burner in the consumer's house. We must admit we were awakened from our Rip Van Winkle slumber, and immediately took on a new life There is scarcely any improvement to-day that is not the direct outgrowth of some suggestion along the lines of electric manufacture and distribution. Every groove that the electric light man has moved in has been a groove made for the gas man to move after him. That even extends to high pressure distribution, which before the times of electric lighting was not included. I believe the thought was extended along the lines of electric transmission, and so it follows, not only in the retort house and in the office, but in the method of dealing with consumers; and it still remains in that same condition. The gas man of today is like he always has been in the matter of his profits. There is no disguising the fact among ourselves that the gas business of the past and the present has been productive of greater revenues as a whole for the amount of money invested than any other business on the face of the globe. There is no doubt about that. And for the purpose of maintaining the high prices all sorts of subterfuges are resorted to as a rule to mislead, not only himself and the public but the individual consumer as well. Now, the consumer of gas, whether for light or for fuel, is not governed at all in his attitude towards the corporation that supplies him with that commodity, by what the rate per 1,000 feet may be. That may seem a rash assertion, but I believe it is an absolutely true one. I venture the assertion that in all the gas companies which you gentlemen represent not 10 per cent. of the people you are supplying gas to could tell you offhand what your rate per 1,000 is. They only know that their bill is so much every month. If their bill is high your rate per 1,000 is high: if their bill is low the rate is reasonable. Therefore, it is not governed by any rate per 1,000 or discounts which they receive. It is by the amount of the bill. The gas consumer wants to know particularly what he is using for light and what he is using for fuel. With a single rate predominating in a city a household can never tell what its division of expenses is. You will bear me out, those of you who have this differential rate, that the proportion of complaints from consumers using gas stoves under separate meters is not one in 1,000 as to the size of the bill. That I believe to be an absolutely true assertion, simply from the fact that they know by comparison. Their gas illumination they do not know by comparison; but every gas consumer who uses a gas stove, be it frequent or infrequent, has his former fuel bills to compare his expenses with, and he judges not by the price per 1,000 whether or not he can afford to continue the use of gas for fuel. And you can present it in no other way to a consumer except by a separate meter which gives him his rating per month. We have in our district about 6,000 stoves out upon meters. That has been the direct growth in a matter of say 12 years since we first established the different rate and separate runs for gas stoves. We have found it profitable. There is no guesswork about that. We absolutely know that the investment in separate meters for gas stove consumption is profitable, much more profitable for the amount of money invested than the laying of new mains to obtain consumers. And I have always wondered why it was that a gas man would combat the proposition of expending a few dollars in the extension of his gas mains through new territory on the plea of economy, on the plea of lack of funds, to get consumers, when he will spend four times as much money as that will represent in taking care of consumers along the lines of existing mains. Mr. Aldrich speaks about the proposition of piping houses. That is a matter of education in every town or city. It has not been difficult for us in Oakland to induce all architects and owners of houses to provide in the building of new ones for the establishment of fuel lines; and to-day not a new house goes up in our territory which has not two lines of pipe, one for illuminating and one for fuel, the fuel pipes leading to the grates in the living rooms and bed rooms, and for instantaneous heaters in the bath rooms and toilets along the lines of other rooms for heaters. In the older houses we have no difficulty locating the stove, if it is on the first floor, by running a pipe underneath in the cellar, or in flats bringing it up on the outside of the building to the position the situation may require. The expense to the company is trifling, and the interest it gets back far exceeds any illuminating meter you may set. Mr. Martin has placed the average monthly consumption of a gas stove at $2. I think that is low. I think with the present methods of water heaters you will find that the average consumption in most houses will reach nearer $5. Where they use an instantaneous heater, a boiler heater, 2 or 3 grates, and 1 or 2 heaters and a gas stove, I am sure it will run nearer $5 than $2 in every city where the price is reasonable, or in competition with coal at the present time. My main point as an educational argument to the gas man here, is that you satisfy your consumer. You get nearer to him by a method which will determine to him what his expenses are than you can possibly do in any other way by discounts or otherwise. I have found in our experience in a great many cases where gas stoves were connected to the illuminating rate that they were not used when they should be, and that there is very little expense on our part in separating that from illuminating gas for a customer and putting him upon a direct fuel run. It has resulted in an increased fuel consumption which would more than pay the expense of making the separation. I think that the differential rate applies equally as well, not only to fuel gas but to larger consumption. We have in our district a number of canneries which it had been impossible for us to obtain at our rates as against the cost of gasoline. Yet at the rate we made of $1 per 1,000—and I have made rates even less than that for large quantities—we have had one consumer who would use over 500,000 cubic feet per month. That did not cost the company one cent over and above the cost of the material used in its manufacture. Nor do I find that an increase in the past two years of nearly 3½ million feet the month on fuel consumption has resulted in a cost to us of one cent for distribution expenses, and no cost for manufacturing expenses. I think the gas men of the Pacific Coast all make a mistake in not appealing to their consumers upon the line of separating the fuel gas from the illuminating, and so making it an object to them to use that which we can demonstrate by such a separation is the cheapest fuel that they can possibly use. (Applause.)

Mr. Gutsch I think it is a very good point, as Mr. Britton says, that if a man has two meters in a house he can trace a complaint. If one meter is entirely off, which happens occasionally, then the other meter is likely to be correct. There is a great advantage in that, but it seems to me a man who buys gas has a right to do with it as he pleases, and ought to pay the same price.

Mr. Lowe—I don't think Mr. Britton's argument went at all to the question of differential rates. I think it was an excellent argument so far as the use of two meters is concerned. I don't think anybody will gainsay the convenience of two meters, but that is merely a local matter. Certainly very small gas companies could not very well afford it. Larger ones are able, but generally speaking I am inclined to believe that the weight of the argument must lie, as it does with all public utilities, in supplying the consumer gas at a uniform cost. I do not believe in differential rates so-called. I am quite satisfied that gas men—those of us who use oil in the manufacture of gas—would not like very well the idea of paying differential rates for oil, one for firing under our boilers for steam making purposes, and one for putting into our gas making apparatus, notwithstanding the fact that the oil was shipped to the same consumer. We would not find it very logical. Nor if the street car company charged us 5 cents at one time of the day and 10 cents at another, or 5 cents on one street and 10 cents on another. These are all matters of local necessity probably, but I think in most cases the wish is father to the thought. From an economic standpoint, largely from a municipal standpoint, I think the very best interests of the consumer are served by selling him his gas for all purposes at the lowest price at which you are able to, giving him two meters if you are willing to do it as a mere matter of information, not alone to him but to yourself as well.

Mr. Aldrich—I only want to take one exception to the eloquent effort of our brother—he prefaced his remark because he wanted to have a dig at me before he started in, that is all there is about that—but I don't want it to go forth, Mr. President, that I am in favor of differential rates. I simply said that the man who uses 1,000 feet of gas should not have the same rates as the man who uses 100,000 feet. That is the only thing I suggested in the matter of differential rates.

Mr. Osborn—There are a few remarks, if everyone is through, I should like to make regarding the criticism of Mr. Aldrich that he was sorry I did not go farther into the question as to why a differential rate should be made, or the conditions that brought about a differential rate. I tried to make it clear that it was purely a question of competition. We are out for business. We ordinarily charge all the traffic will bear, and competition keeps us down so we are not making any more money on our investment than people in another business furnishing light and fuel. Regarding the Welsbach burner, I qualified my remarks in the paper in regard to large cities; but it is a well-known fact to all of us who have managed small plants that as an investment the Welsbach burner cut our receipts and so affected our revenue, and there is not a gas man here to-day but would like to see the good old times of the flat flame burner back again.

Mr. Aldrich—I would not.

Mr. Osborn—I mean the gentlemen of the smaller towns. You gentlemen of the larger cities do not know. You hardly have a limit as to what you can supply. That is, the field for expanding your business will make up for your losses in economies of the Welsbach burner such as is not the case in the smaller towns. Regarding the matter of getting lost in the procession, I believe in a uniform rate for illumination, because, except in the larger cities, there is nothing in the small consumer, say one who uses 3 or 4 Welsbachs and consumes 1,000 feet a month. We will never pay our fixed charges on that sort of consumer. But we do make something on the man who consumes 10,000 feet a month; and, as a matter of fact, he must make up for the man on whom, by reason

of his small consumption, you lose money. In fact, "One half of the world is living off the other half," I have heard it stated. I don't know whether it is a fact or not. (Laughter.) In my opinion, if Mr. Aldrich is charging $1.50 for a consumer who is using 1,000 feet of gas for light between the hours of 10 and 6 o'clock, he is charging too much for his fuel gas; or, in other words, he is making the fuel consumer pay for the losses he sustains in maintaining a service for a lighting consumer, and he is retarding the use of fuel gas. That is my opinion. I tell you it does cost more money to supply gas on the peak load.

Mr. Aldrich—It doesn't cost a cent more.

Mr. Osborn—If you can make money on the gas consumer on the peak load, on the day load you can increase your consumption, reduce your fixed charges and make more money. Mr. Britton answered the question as to the present piping of buildings. However, if Mr. Aldrich doesn't know how to keep the pipes from being exposed on the ceilings we will send him up a gasfitter. (Laughter.)

Mr. Martin—I think Mr. Lowe was the author of a statement originally—which I investigated and found to be true—that the Standard Oil Company in the East sells gas oil, the same material that they sell for other purposes at about 3 times the price, and the gas man pays it for that particular purpose.

Mr. Lowe—It is not alone the Standard Oil Company in the East. It is not long since the Coalinga oil was sold to us for two prices It was pumped out of the same well, sent to us in the same tank car, and if you used it for different purposes you would split it and pay one price for your fuel and one price for your gas oil, and I assume there is not one member of this Association who thinks that it was a just and businesslike proceeding. I think the same principle applies to the sale of gas. I will ask Mr. Osborn if the question is not largely governed by local conditions? Does it not make a difference whether you are running the electric light plant or whether you are the competitor of the electric company. I also wish to ask if you were a competitor having gas alone would you then charge two prices, one for light and one for fuel? Would you compel the fuel user to pay more for the dollar's worth of gas that he wishes for light, or would you take him in and say "Old man, you can have it all for one price"? Now, I think you can all answer that question for yourselves. I don't think you would throw away the illuminating business, no matter how small, and turn it over and force it into the hands of your electric competitor if you had gas for sale. (Applause.)

Mr. Osborn—In answer to Mr. Lowe I will state, yes; I would have two prices, if I were not in the electric business, or if I had no competitor, or if I did have a competitor, because it would be sound business. It would cost me more money to deliver the gas during the lighting hours, consequently I would have to have the money to do it. The fuel business, as I have contended in my paper, is an entirely different business. It comes through the same pipe, but it is an entirely different business. The man that was in the lighting business knows nothing about the fuel business. We have all been educated to that. The man who quit the gas business 10 years ago and came back in it to-day would not know where he "was at" at all, and if we are selling fuel gas and illuminating gas at the same price I tell you the consumer is suffering, because he is being made to pay for the losses made on illuminating gas,

Mr. Poole—I believe before very long it will resolve itself into one meter and one rate. The same condition existed a few years ago in electric meters. All kinds of inducements were made to consumers to use motors, and during the time they were being educated different rates were quoted; but it has resolved itself into almost a general thing now of giving one rate for both power and lights, and my opinion is that before many years the same thing will exist in the gas business; that after your consumers have been educated up to use it you will know in a general way what proportion of the gas is going to be used by your consumers for heating and for illuminating purposes, and you will be justified then in making one general rate.

Mr. Lowe—I think just one little point is generally overlooked in this question of double meters. We all know that unless electricity is sold at a very low rate the incandescent gas light will simply be much cheaper than any other sort of artificial illumination; so very much cheaper that you could not afford to get into the gas business if you had nothing but the incandescent gas burner to give you your consumption, and you would better stay out. Now, there is a point also at which you can afford to sell gas and make a reasonable profit, and you must have that return; but that price may not be a sufficiently low one to enable your gas consumer to use it largely for fuel. If you could take his lighting business at its former price, and his fuel business, and average them up, you might be able to take both and do his work at your price for gas the lowest price at which you could afford to sell it. If you give him separate meters you show him how very, very cheap is his light, and how expensive is his fuel; but if you put it all on one meter you then average it up, he does not know the difference, it does not cost him a penny more than it ever did before, and you have switched the business from your competitor's pocket into your own.

Mr. Martin—I think we are trying to thresh over very old straw, and the reason I say that is by my mind reverting to what the railroads do. It costs them no more to haul a carload of silk than a carload of coal, and consequently they should have a uniform rate for everything. The same argument would apply here. Our competition is of a different nature. In one case we compete with coal, or wood, or gasoline, or coal oil, on the one hand, and on the other hand we compete with artificial illumination of some other sort. One is an expensive proposition, one is an economical proposition. With all due respect to Mr. Poole, with whom I differ most seriously in regard to the rates for power and lights, and I know of no other company that charges the same rate for illumination and power, if he will recall the final adjudication of rates in New York city by the brightest minds in the United States he will find they have adopted a price as a charge for readiness to serve. They make an initial charge whether you use any or not of so much per light per month, and then a small minimum charge for the current actually furnished. That is what we aim to do by the two rate meter in a very different way, but trying to accomplish the same results. When we charge a high rate for illumination we charge for readiness to serve, because you are taxing the readiness of our plant for 2 or 3 hours, and it remains idle for the rest of the day. By building up a business in the interim you are enabled to lower the cost of manufacture per 1,000, but by giving that benefit to the consumer who gives you that economy you are enabled later on to reduce the rate for illumination as well.

Mr. Holberton—All this discussion seems to be as to fuel gas and illuminating gas, whereas the argument is as to day gas and night gas. Would it not be well to give a rate for gas consumed during the day which would be less than the amount per peak load. In the winter time your consumer who is using gas for fuel, is using it just at the time you don't want him to. Now, is not a man who has a store where he has a big basement a much better consumer than the stove man, because he does use it all day long, just when you want him to, and would not it be a very fair proposition to give a different rate for day consumption than for night consumption? In fact, is not that what you are driving at?

Mr. Martin—That is the distinction we are trying to arrive at; in other words, the use of your plant. But as there is so little cellar lighting (I refer to all cities except the very large ones; and even in the larger cities it is not one per cent. of the total consumption) it is such a small factor you cannot differentiate for that particular kind of illumination. But it is a fact the maximum demand comes upon you for a very short time, and the mains have to be that much larger. In order to use that idle investment for as many hours as possible you lower the price of your commodity to be used in a different channel for a different proposition in competition with a different material, in order to try and build up a profit on the investment which is lying idle.

Mr. Britton—It seems to me the whole thing has hinged itself upon what Mr. Lowe said. While he really admits the virtue of the two meter proposition, it then becomes an educational matter. I don't believe there is a community in the United States to-day where it could be started out as a new proposition in gas consumption that you could promote the use of fuel to any very great extent, if your rate was the same whether you started in at a $1 gas or $2.50 gas. I believe you have to pursue that part of your business along the lines of education, and you cannot do that by mixing your two commodities. They must be separated before the consumer knows the advantage of what he is paying for. After he gets so it makes no difference to the consumer, and it is beyond the competitive rates for other commodities for the same use, then the two meters can be thrown out of use, but it must reach a very low figure to reach that point. That point in California is possibly $1 gas. With the people educated to the use of gas for fuel, if the price of gas could be made at $1, with the incentive that people have to use gas stoves now, you would need no further lines of education; but take any city that is selling gas for over $1 a 1,000 you must pursue that line of education, because, compared with advertising, with selling stoves below cost, canvassers, or any other means, there is nothing comparable to the difference in rates with two meters at two rates until you have arrived at the point where you have educated them. I think the best evidence of that is actual, personal experience. We started in to make a difference in rate when our illuminating rate was $3.50 per 1,000. The first reduction we made was to $3.25 for fuel. We commenced to get the advantages right away of the education, and the increase in consumption down to the present time when our fuel gas is 1.25 per 1,000 has been uniform. There has been no time when the reduction on the lower rate has afforded any greater amount of consumption in proportion than it did when gas was selling for $3.50 for illuminating and $3.25 for fuel. Now, it has reached a rate where if another reduction takes place I think we can dispense with our extra meter, because we have educated probably to that extent

The Chairman—Let us return to the discussion of the paper on municipal ownership.

Mr. Britton—I move that the matter of the discussion of Mr. Symmes' paper be left till just before adjournment, and if we have time to take it up then we can do so.

The Chairman—If there is no objection that will be done.

[To be Continued.]

ITEMS OF INTEREST FROM VARIOUS LOCALITIES.

Mr. F. B. Aldrich, General Manager of the Wyandotte Gas Company, of Bethlehem, Pa., writing to the Journal under date of the 5th inst., had this to say: "To show you what can be done with a small gas plant like this, our increase last month was 1,000,000 cubic feet over the corresponding month a year ago, or a gain of 55½ per cent. I think few can beat this showing. In this town of 20,000 population we sold this summer over 700 stoves, and increased our meter sets from 1,250 to 2,200." The Messrs. Flick seem to have made no mistake when they put Mr. Aldrich in the position of General Manager of their Company.

The General Gas Light Company, of Kalamazoo, Mich., has established an Eastern agency and headquarters in this city, at No. 54 Warren street, with Mr. J. P. Conroy as Manager. The Company will here carry a full line of its specialties—different styles of the Hum-

phrey gas arc lamps—and all orders therefor for shipment to any point in the Eastern States will be made from the New York office and warehouse.

THE owners of three large apartment houses of the very finest type in this city—one located in Central Park, West, and two situated in the intersecting streets—have applied to a firm of local architects to alter the existing arrangements of chimneys, etc., looking to the installation of gas logs, vice the use of steam radiators, on the score of health, comfort and utility.

"C. A. L.," WRITING to us under date of the 8th inst, says: "A few days ago I took a trip to Nantucket with my wife, to see the quaint old town and its people. As we passed along the main street, I espied, at the corner of an intersecting street, this sign beside a narrow door: 'Office of the Nantucket Gas Light Company.' I could not resist the temptation to enter and inquire for the Manager, Superintendent or Clerk, whoever he might be. Well, inside the store we noted that the office was a 4 feet by 8 feet space in the front corner of an old curiosity shop, auction room and wood carver's boudoir. The latter place revealed a room of truly wonderful wood carvings of many historic buildings, all made from single pieces of wood, frame and all. Here my wife became anchored while I made inquiry for the gas man, who was not in evidence; also, as to whose the works were. Our works' manager soon arrived, and we passed a short time in inquiry over the works, the business thereof, and the customers. The influx of summer population is so great that the Gas Company can hardly keep up with the demands made upon it. It has 300 meters placed, on a trifle over 2 miles of main. Most of the customers are the stores, hotels and transients. Few of the 'natives' use the gas. Our friend informed us that both the gas and electric business had just been purchased by a Mr. Coles, of South Framingham, Mass. This ended our interview, and eventually I succeeded in getting my wife away from the fascinations of the wood carving room. Later in the day, after our return from 'Sconset, a town on the south side of the Island, the home of many a fisherman, and the Marconi telegraph station recently installed, we found our way to the gas works. This was a most interesting place. The business had been established many years ago, but with the rush of the summer population the plant had not kept pace. As we entered the open door of the retort house we were met by two men. It was the time of changing the shifts; one day and one night man composed the 'gangs.' We made ourselves known, and were forthwith given the 'freedom of the works.' Our escort was the 'night foreman.' Nestled at one side of the room were 2 benches of 3's and 'a bench of 1's.' The 2 benches of 3's were doing their best on 4-hour charges; the junior bench was out of commission. Passing through this house we entered the yard and up some steps to the purifying house. Here were four 6 feet by 6 feet by 3 feet boxes, supplied with lime as the purifying agent. In the room was the station meter, set facing the wall—just the wrong way, it seemed to me; but I suppose space was an object. There was no exhauster and no engine. Next we climbed the bank and viewed the holder—the spacious holder—of 13,000 cubic feet capacity, 10,000 being available for daily use. This holder had a house over it, shingled top and sides, like so many of the buildings in Nantucket. Until this year there had been no sale for coke. Now, however, it was readily taken at 10 cents per bushel on the yard, and a supply of 1,500 to 2,000 bushels had brought in quite a little revenue. Tar, too, had a ready sale, and was of fine quality. Our guide was anxious to show us the candle power of the gas; and that, too, was all right—18 and over. Nantucket cannot complain of poor gas. He said they could hardly keep up with the procession. Their output was so great that the holder grounded often. That very night they expected it would be flat by 11. In fact they had notified one of their heavy consumers that they would be unable to supply him all he wanted. After assuring our guide that this would all be soon changed, that under the new management there would be enough gas for all, and that doubtless the works would be reconstructed, we took our departure, having seen a small works where there was a good chance for remodeling, and a town that would respond if it had an opportunity."

MR. HENRY B. SMITH has been appointed official gas inspector for Wyandotte, Mich. He rejoices in the salary of $100 per annum.

THE voters of Holland, Mich., will soon be called upon to vote over the question as to the advisability of constructing a gas plant there, and at the same time to indicate their preference as to whether the plant should be operated on public or private account. Holland operates an electric lighting plant on public account.

THE new water gas plant erected on the works of the Houston (Tex.) Gas Light Company by the United Gas Improvement Company is in satisfactory operation, or is ready for satisfactory operation. We understand that the capacity of the sets is 1,000,000 cubic feet per day, and the apparatus is new and complete in every particular. The apparatus was installed under the direct supervision of Mr. W. E. Mockett, under the watchful eyes of Mr. J. H. Fitzgerald.

THE Wyoming electric lighting plant which furnished light to the residents of Wyoming and Lockland, villages adjoining Cincinnati, O., has been purchased by the Cincinnati Gas and Electric Company.

THE officials of the Winchester (Va.) Gas Company recently notified their customers that the supply of gas would have to be discontinued, owing to the inability of the coal companies to secure cars to transport coal!

MR. FRED. BOWLES has resigned the position of Superintendent of the Hillsdale City (Mich.) Gas Company. His successor is Mr. Robert Seitz, who will have for an assistant, respecting the supervision of manufacture, Mr. P. L. Amoreaux.

THE County Commissioners have awarded the contract for the lighting and heating of the new jail in St. Paul, Minn., to the St. Paul Gas Light Company.

THE Watsonville (Cal.) Gas Light Company's plant is being rebuilt. It is also planned to place 6 miles of additional mains.

MR. C. D. STRONG has resigned the position of General Manager to the Lincoln (Neb.) Gas and Electric Company. His successor is Mr. L. G. Van Ness, who has been prominent in the electric division of the Denver (Col.) Company.

THE gas plant recently contracted for by the proprietors of the Tucson (Ariz.) Gas and Electric Light Company will be completed by December 1st.

MR. W. A. PORTER is informed that the capital stock of the Central Gas and Electric Company, of Hot Springs, Ark., is registered at $1,000,000. The incorporators are Messrs. Simon Louderbock, James G. Meyer and Charles W. Hageman.

MR. W. W DELONG is to manage locally the affairs of the Citizens Light and Power Company, the plant for which is being constructed at Ballard, Wash.

MR. J. B. LYDECKER, of Paterson, N. J., has applied to the authorities of Atlantic Highlands, N. J., for a franchise to construct and operate a gas works in the Highlands. The need for a gas works at the point named is unquestioned, but it is believed that the franchise will not soon be granted as the electric lighting supply of the Highlands is under control of the municipality.

THE United Gas Improvement Company has disposed of its Sag Harbor (L. I.) plant to local investors. The negotiations for the sale were conducted by Mr. Francis H. Palmer, Cashier of the Peconic Bank, who we understand has arranged for the transfer of the property to a stock company.

MR. MOSBY HORNEO has been appointed Manager of the office end of the Helena (Ark.) Gas Company, vice Mr. R. T. Pitchford, resigned.

THE main system of the United Gas Improvement Company's Harrisburg (Pa.) plant is being systematically relaid. The trunk mains have been replaced with ones of increased diameters sufficient to guarantee a good supply of gas in the busiest districts, during the busiest hours. Gas ranges to the number of 600 were placed in Harrisburg this summer.

"T. F. S.," WRITING to the JOURNAL under date of the 6th inst., inclosed the following: "The Springfield (Mass) Gas Light Company has been given a hearing before the Board of Gas and Electric Light Commissioners, on its petition asking permission to increase its stock in the sum of $250,000, at the par value of the shares, which is $100 each. At the hearing, F. C. Royce, Vice-President, and F. de V. Thompson, Manager, appeared for the Company; and City Solicitor, Henry A. King, represented the city. In the course of the hearing it was admitted that the Company's business had greatly increased during the past year; that the last sales of the stock were at 230; that 10 per cent. dividends were paid last year, and with the increase granted it was expected to continue that rule; that the tax assessment this year is made on

a property valuation of $689,500, beside which the Company has investments (as self-insurance) of $105,000, making a total valuation of at least $794,500. It was stated that the output of gas last year increased 29,000,000 feet, while in the past 2 months the increase had been 12,000,000. City Solicitor King urged that under the existing conditions there was no need for any issue of stock being allowed, and if any were given that not over $75,000 at the rate of 220 be allowed. Vice-President Royce explained that the increase in stock was asked to provide for increasing the capacity of the plant as follows: Gasholder and boiler house, $70,000; mains, 1 mile already constructed, and more to be laid, $35,000; new retort plant, $122,000; new boiler plant, $11,000; steam plant for water gas, $9,000; new coal handling apparatus, $16,500; total $263,500. The inference from the questioning on the part of City Solicitor King was that the Company was looking to the possibility of securing the issue of stock at par for $250,000, which might be disposed of at a rate approaching at least 220. The history of the passing of the control of the Company from the resident stockholders to the present corporation was reviewed. Sixty per cent. of the stock was originally bought at $185 a share in February, 1901, and for enough more to secure a certain control about 210 was paid. The 60 per cent. was deposited with a New York Trust Company as a voting trust to continue for 5 years. At the suggestion that it was rumored the Company planned to pay 12 per cent. dividends next year, Vice-President Royce said that it had not been talked in the Board. Beside the other figures on the valuation of the plant, the report to the Commissioners shows a profit and loss balance of $144,000. The Commissioners pressed the question whether the Company did not intend to divide as a dividend the surplus investment of $105,000, but it was affirmed that fund was needed as a self-insurance. The Company has no bonds or notes outstanding. The Commissioners went into details in questioning witnesses, indicating their interest in the subject. Members of the Commission expressed their satisfaction with the fact that the City Solicitor had shown an interest in the hearing. Decision was reserved."

The Market for Gas Securities.

The market for city gas shares during the week was of the uncertain sort, in that prices were high and low—high at the middle and low at the finish. The closing weakness to-day (Friday) was clearly attributable to the manipulation of the money market, but the net decline in Consolidated for the six days' trading is only a point. It closed at 222¼ to 223. There is quite some demand for Standard common.

Brooklyn Union was traded in rather more than usual this week, and the net result for the period is a gain of 2 points in the bid price. It is 242 to 246. Peoples, of Chicago, showed signs of manipulation, and it is understood that a fairly good short interest has been brought about in it. The United Gas Improvement Company, of Philadelphia, has declared the usual quarterly dividend of 2 per cent. It is payable the 30th inst. There is good reason for the assertion that these shares will shortly experience a decided advance. Baltimore Consolidated is steady, and the same may be said of the general gas share market.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

16 Wall Street, New York City.

September 15.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share.

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked.*
Consolidated	$73,177,000	100	222¾	223
Central Union, Bonds, 5's.	3,000,000	1,000	110	112
Equitable Bonds, 6's	1,000,000	1,000	105	..
" 1st Con. 5's	2,300,000	1,000	118	120
Metropolitan Bonds	658,000	..	108	112
Mutual	3,500,000	100	350	..
Municipal Bonds	750,000	..	..	..
New Amsterdam Gas Co. .. Bonds, 5's	11,000,000	1,000	112½	113
Northern Union, Bonds, 5's.	1,250,000	1,000	108	110
New York and East River .. Bonds 1st 5's	3,500,000	1,000	112	113
" 1st Con. 5's	1,500,000	.	109	111
Richmond Co., S. I.	348,650	50	100	..
" Bonds.	100,000	1,000	103	
Standard	5,000,000	100	130	140
Preferred	5,000,000	100	150	160
Bonds, 1st Mortgage, 5's	1,500,000	1,000	114	117
Yonkers	299,650	500	130	..
Out-of-Town Companies.				
Brooklyn Union	15,000,000	100	242	246
" " Bonds (5's)	15 000,000	1,000	119	119½
Bay State	50,000,000	50	1¾	2
" Income Bonds.	2,000,000	1,000	.	75
Binghamton Gas Works.	450,000	100	28	30
" 1st Mtg. 5's	509,000	1,000	93	96
Boston United Gas Co.— 1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	10	12
" " Bonds, 5's	5,256,000	1,000	79	81
Capital, Sacramento	500,000	50	..	35
Bonds (6's)	150,000	1,000		
Central San Francisco	2,000,000	..	106	108
Chicago Gas Co. Guaranteed Gold Bonds	7,650,000	1,000	104	104¼
Cincinnati Gas & Elec. Co.	29,500,000	100	100	100¼
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	101	101½
Columbus (O.) Gas Lt. & Heating Co	1,682,750	100	88¼	89½
Preferred	3,026,500	100	107½	109
Consumers, Jersey City Bonds	600,000	1,000	102	103
Consumers, Toronto	1,700,000	50	218	225
Consolidated, Baltimore	11,000,000	100	74½	74¾
Mortgage, 6's	3,600,000	..	..	115
Chesapeake, 1st 6's.	1,000,000	..	..	..
Equitable, 1st 6's.	910,000	..	..	..
Consolidated, 1st 5's	1,490 000	..	.	112
Consolidated Gas Co. of N.J.	1,000,000	100	15	17
" Con. Mtg. 5's	380,000	1,000	85	87
Consolidated G. & E. Co.'s., Little Falls, N.Y.	90,000	100	..	100
Bonds	75,000	..	..	100
Detroit City Gas Co.	4,825,500	50	.	89
" Prior Lien 5's	5,603,000	1,000	99½	100
Detroit Gas Co., 5's	881,000	1,000	77	79
" Inc. 5's	16,000	100	94	94½
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	..	101
Essex and Hudson Gas Co.	6,500,000	..	34	38
Fort Wayne	2,000,000	..	.	.
" Bonds.	2,000,000	..	58	63
Grand Rapids Gas Lt. Co. 1st Mtg. 5's	1,225,000	1,000	104½	105
Hartford	750,000	25	245	265
Hudson County Gas Co., of New Jersey	10,500,000	..	25	..
" Bonds, 5's	10,500,000	..	101	103
Indianapolis	2,000,000	..	70	80
" Bonds, 6's	2 650,000	..	102¾	104½
Jackson Gas Co.	250,000	50	73	75
" 1st Mtg. 5's	290,000	1,000	101	102½
Kansas City Gas Light Co., of Missouri	5,000,000	100	..	36
Bonds, 1st 5's	3,822,000	1,000	102	104
Laclede, St. Louis	10,000,000	100	89	94
Preferred	2,500,000	100	105	110
Bonds	10,000,000	1,000	109½	110
Lafayette Gas Co., Ind.	1,000,000	100	..	60
Bonds	1,000,000	1,000	53	64
Louisville	2,570,000	50	172	190
Madison Gas & Elec. Co. " 1st Mtg. 6's	350,000	1,000	107½	109½
" 6 per cent. scrip, due 1910	100,000	25	25	27
Montreal, Canada	2,000,000	100	182	184¾
Newark, N. J., Con. Gas Co	6,000,000	..	56	58
Bonds, 6's	4,600,000	..	105	105¾
New Haven	1,000,000	25	300	325
Nashville Gas Lt. Co.	1,000,000	100	110	..
Oakland, Cal.	2,000,000	..	46	47
" Bonds.	750,000	..	..	..
Peoples G. L. & Coke Co., of Chicago	25,000,000	100	106	106¼
Peoples Gas Lt. & Coke Co., Chicago, 1st Mortgage	20,100,000	1,000	..	..
2d "	2,500,000	1,000	104	
Rochester Gas & Elec. Co.	2,150,000	50	88	..
Preferred	2,150,000	50	118	..
Consolidated 5's	2,000,000	..	87½	90
San Francisco, Cal.	10,000,000	100	43	45½
St. Paul Gas Light Co.	1,500,000	100	45	47
1st Mortgage 6's.	650,000	1,000	113	116
Extension, 6's	600,000	1,000	113½	115
General Mortgage, 5's.	2,465,000	1,000	92	93
St. Joseph Gas Co. " 1st Mtg. 5's	751,000	1,000	95	96½
Syracuse, N. Y.	1,975,000	100	27	30
Bonds	2,047.000	1,000	86	90
Washington, D. C	2,600,000	20	306	377
First mortgage 6's.	600,000	..	..	..
Western, Milwaukee. Bonds, 5's	4,000,000	..	109½	110
Wilmington, Del.	600,000	50	232	..

Advertisers' Index.

GAS ENGINEERS. Page

Wm. Henry White, New York City ... 391
Fred. Bredel, Milwaukee, Wis. ... 378
Geo. R. Rowland, New York City ... 378
The Western Gas Construction Co., Fort Wayne, Ind. ... 360
Humphreys & Glasgow, New York City ... 389
David Leavitt Hough, New York City ... 388
Economical Gas Apparatus Construct'n Co., Toronto, Ont. 385
Baxter & Young, Detroit, Mich. ... 390
United Gas Improvement Co., Philadelphia, Pa. ... 383
James T. Lynn, Detroit, Mich. ... 388
A. E. Boardman, Brevard, N. C. ... 388
The Jeffrey Manufacturing Co., Columbus, O. ... 386

GAS WORKS APPARATUS AND CONSTRUCTION.

Continental Iron Works, Brooklyn, N. Y ... 390
Deily & Fowler, Philadelphia, Pa. ... 392
Kerr Murray Mfg. Co., Fort Wayne, Ind. ... 388
Stacey Mfg. Co., Cincinnati, Ohio ... 391
Bartlett, Hayward & Co., Baltimore, Md. ... 389
Davis and Farnum Mfg. Co., Waltham, Mass. ... 388
R. D. Wood & Co., Philadelphia, Pa. ... 390
Isbell-Porter Company, New York City ... 390
Fred. Bredel, Milwaukee, Wis. ... 378
United Gas Improvement Co., Philadelphia, Pa. ... 383
Economical Gas Apparatus Construct'n Co., Toronto, Ont. 385
The Western Gas Construction Co., Fort Wayne, Ind. ... 360
Humphreys & Glasgow, New York City ... 389
Logan Iron Works, Brooklyn, N. Y. ... 392
Riter-Conley Mfg. Co., Pittsburg, Pa. ... 391
Baxter & Young, Detroit, Mich. ... 389
G. Shepard Page's Sons, New York City ... 388
James T. Lynn, Detroit, Mich. ... 388
A. E. Boardman, Brevard, N. C. ... 388
Christopher Cunningham, Brooklyn, N.Y. ... 376
The Jeffrey Manufacturing Co., Columbus, O. ... 386
Quintard Iron Works, New York City ... 385
The Connersville Blower Company, Connersville, Ind. ... 393
Lloyd Construction Co., Detroit, Mich. ... 378
Connelly Iron Sponge and Governor Co., New York City 348

PROCESSES.

Bartlett, Hayward & Co., Baltimore, Md. ... 389
United Gas Improvement Co., Philadelphia, Pa. ... 383
Burdett Loomis, Hartford, Conn. ... 390
Economical Gas Apparatus Construct'n Co, Toronto, Ont. 385
The Western Gas Construction Co., Fort Wayne, Ind. ... 360
Humphreys & Glasgow, New York City ... 389
B. E. Chollar, St. Louis, Mo. ... 375

SCRUBBERS AND CONDENSERS.

R. D. Wood & Co., Philadelphia, Pa. ... 390
Continental Iron Works, Brooklyn, N.Y. ... 390
Logan Iron Works, Brooklyn, N. Y. ... 392
Riter-Conley Mfg. Co., Pittsburg, Pa. ... 391
The Western Gas Construction Co., Fort Wayne, Ind. ... 360

PRODUCER POWER PLANTS.

R. D. Wood & Co., Philadelphia, Pa. ... 390

TAR AND CARBONIC ACID EXTRACTOR.

The Western Gas Construction Co., Fort Wayne, Ind. ... 360

AMMONIA CONCENTRATORS.

Michigan Ammonia Works, Detroit, Mich..... 375
The Western Gas Construction Co., Fort Wayne, Ind... 360

GAS METERS.

John J. Griffin & Co., Philadelphia, Pa..... 396
American Meter Co., New York and Philadelphia..... 395
Helme & McIlhenny, Philadelphia, Pa..... 395
D. McDonald & Co., Albany, N.Y..... 393
Nathaniel Tufts Meter Co., Boston, Mass..... 394
Maryland Meter and Mfg. Co., Baltimore, Md..... 394
Metric Metal Co., Erie, Pa..... 395
Keystone Meter Co., Royersford, Pa..... 394
Detroit Meter Company, Detroit, Mich..... 395

PREPAYMENT METERS.

American Meter Co., New York and Philadelphia... 395
John J. Griffin & Co., Philadelphia, Pa..... 396
D. McDonald & Co., Albany, N. Y..... 393
Helme & McIlhenny, Philadelphia Pa..... 395
Nathaniel Tufts Meter Co., Boston, Mass..... 394
Keystone Meter Co., Royersford, Pa..... 394

GAS AND WATER PIPES.

M. J. Drummond & Co., New York City..... 380
R. D. Wood & Co., Philadelphia, Pa..... 380
Warren Foundry and Machine Co., New York City..... 380
Donaldson Iron Co., Emaus, Pa..... 380
Christopher Cunningham, Brooklyn, N.Y..... 376
Charles Millar & Son Co., Utica, N. Y..... 380

GAS MAIN STOPPERS.

Safety Gas Main Stopper Co., N.Y. City..... 380

GAS TAPPING MACHINES.

George Light, Dayton, O..... 380
H. Mueller Manufacturing Company, Decatur, Ills..... 377

GAS COALS.

Perkins & Co., New York City..... 386
Westmoreland Coal Co., Philadelphia, Pa..... 385
Berwind-White Coal Mining Co., New York and Phila.. 386

CANNEL COALS.

Perkins & Co., New York City..... 386

CONVEYORS.

The Link-Belt Machinery Co., Chicago, Ills..... 387
The Western Gas Construction Co., Fort Wayne, Ind... 360
The Jeffrey Manufacturing Co., Columbus, O..... 386
C. W. Hunt Company, New York City..... 377
Akron Cultivator Co., Akron, O..... 374

GAS ENRICHERS.

Standard Oil Co., New York City..... 387
The Sun Oil Co., Pittsburg, Pa..... 387

COKE CRUSHERS.

C. M. Keller, Columbus, Ind..... 387
The Jeffrey Manufacturing Co., Columbus, O..... 386

STEAM BLOWER FOR BURNING BREEZE.

H. E. Parson, Brooklyn, N.Y..... 385
The Connersville Blower Company, Connersville, Ind... 393

ECONOMIZERS.

Green Fuel Economizer Co., Matteawan, N.Y..... 376

GAS GAUGES.

The Bristol Co., Waterbury, Conn..... 386

GAS GOVERNORS.

Connelly Iron Sponge and Governor Co., New York City 343
Isbell-Porter Co., New York City..... 390
R. D. Wood & Co., Philadelphia, Pa..... 390

CEMENTS.

C. L. Gerould, Galesburg, Ills..... 384

RETORTS AND FIREBRICKS.

J. H. Gautier & Co., Jersey City, N. J..... 384
Adam Weber Sons, New York City..... 384
Laclede Firebrick Mfg. Co., St. Louis, Mo..... 384
Cyrus Borgner, Philadelphia, Pa..... 384
James Gardner, Jr., Co., Pittsburg, Pa..... 384
Henry Maurer & Son, New York City..... 384
Baltimore Retort and Firebrick Co., Baltimore, Md.. 384
Parker-Russell Mining and Mfg. Co., St. Louis, Mo..... 384
Brooklyn Firebrick Works, Brooklyn, N. Y..... 384
Missouri Firebrick Co., St. Louis, Mo..... 384

REGENERATIVE FURNACES.

Bartlett, Hayward & Co., Baltimore, Md..... 389
Fred. Bredel, Milwaukee, Wis..... 378
J. H. Gautier & Co., Jersey City, N.J..... 384
Parker-Russell Mining and Mfg. Co., St. Louis, Mo..... 384
Adam Weber Sons, New York City..... 384
Laclede Firebrick Mfg. Co., St. Louis, Mo..... 384
Missouri Firebrick Co., St. Louis, Mo..... 384

SELF-SEALING MOUTHPIECE DOORS.

Isbell-Porter Co., New York City..... 390
Continental Iron Works, Brooklyn, N.Y..... 390
Logan Iron Works, Brooklyn, N.Y..... 392
R. D. Wood & Co., Philadelphia, Pa..... 390
The Western Gas Construction Co., Fort Wayne, Ind... 360

CHIMNEY CONSTRUCTION.

Adam Weber Sons, New York City..... 384

INCANDESCENT GAS LAMPS.

Welsbach Company, Gloucester, N. J..... 382
General Gas Light Company, Kalamazoo, Mich..... 377
D. M. Steward Mfg. Co., Chattanooga, Tenn..... 376
Detroit Arc Gas Light Co., Detroit, Mich..... 375

BURNERS.

C. A. Gefrorer, Philadelphia, Pa..... 375
Wm. M. Crane Co., New York City..... 377
D. M. Steward Mfg. Co., Chattanooga, Tenn..... 376
Sunlight Lava Mfg. Co., Chattanooga, Tenn..... 375

LAVA GAS TIPS.

D. M. Steward Mfg. Co., Chattanooga, Tenn..... 376
Sunlight Lava Mfg. Co., Chattanooga, Tenn..... 375

STREET LAMPS.

Welsbach Street Lighting Co., New York and Phila.... 382
Thos. T. W. Miner, New York City..... 375

PURIFIERS.

R. D. Wood & Co., Philadelphia, Pa..... 390
Stacey Mfg. Co., Cincinnati, O..... 385
The Western Gas Construction Co., Fort Wayne, Ind... 360

PURIFYING MATERIALS.

Connelly Iron Sponge and Governor Co., New York City 343

VALVES.

Ludlow Valve Manufacturing Co., Troy, N.Y..... 377
R. D. Wood & Co., Philadelphia, Pa..... 390
Continental Iron Works, Brooklyn, N. Y..... 390
The P. H. & F. M. Roots Co., Connersville, Ind..... 379
Isbell-Porter Co., New York City..... 390
The Western Gas Construction Co., Fort Wayne, Ind.... 360
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 388

EXHAUSTERS.

The P. H. & F. M. Roots Co., Connersville, Ind..... 379
Isbell-Porter Company, New York City..... 390
Connelly Iron Sponge and Governor Co., New York City 343
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 388
The Connersville Blower Company, Connersville, Ind... 393

ELECTRICAL APPARATUS.

Wm. Henry White, New York City..... 391

BOILERS, STACKS, TANKS, ETC.

The Hazelton Boiler Company, Rutherford, N.J..... 375

PURIFIER SCREENS.

John Cabot, New York City..... 386

GAS STOVES.

American Meter Co., New York and Philadelphia..... 391
Maryland Meter and Manufacturing Co., Baltimore, Md 394
Keystone Meter Co., Royersford, Pa..... 394
Nathaniel Tufts Meter Co., Boston Mass..... 394

HOT WATER HEATERS.

The Humphrey Mfg. and Plating Co., Kalamazoo, Mich. 380

GASHOLDER TANKS.

J. P. Whittier, Brooklyn, N.Y..... 378

(*Continued on page* 375.)

DIVIDEND NOTICE.

OFFICE OF THE UNITED GAS IMPROVEMENT CO.,
N. W. CORNER BROAD AND ARCH STS.,
PHILADELPHIA, PA., Sept. 10, 1902.

The Directors have this day declared a quarterly dividend of 2 per cent. (one dollar per share), payable Oct. 15th, 1902, to stockholders of record at the close of business, Sept. 30, 1902. Checks will be mailed.

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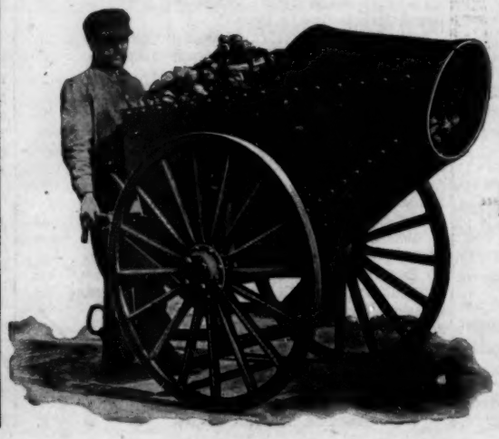

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(*Concluded from page 374.*)

GASHOLDERS.

Bartlett, Hayward & Co., Baltimore, Md..... 389
Continental Iron Works, Brooklyn, N.Y..... 390
Deily & Fowler, Philadelphia, Pa..... 392
Davis & Farnum Mfg. Co., Waltham, Mass..... 388
Kerr Murray Mfg. Co., FortWayne, Ind..... 388
Stacey Mfg. Co., Cincinnati, O..... 391
R. D. Wood & Co., Philadelphia, Pa..... 390
Logan Iron Works, Brooklyn, N Y..... 392
Riter-Conley Mfg. Co., Pittsburg, Pa..... 391

STORAGE TANKS.

Christopher Cunningham, Brooklyn, N.Y..... 376

INVESTORS.

W. R. Faben Construction Company, Toledo, O..... 375

BOOKS, ETC.

Newbigging's Handbook..... 394
Field's Analysis, 1901..... 385
Gas Flow Computers..... 387
Excerpts from Reports of Gas Commissioners..... 395
Directory of Gas Companies..... 391
Gas Engineer's Laboratory Handbook..... 390
Gas Engineer's Pocket-Book..... 389
Poole on Fuels..... 387
Practical Photometry..... 392
Practical Handbook on Gas Engine..... 385
Hughes' "Gas Works"..... 380
Coal Tar Tree..... 378
Electric Gas Lighting..... 384
Binders..... 387

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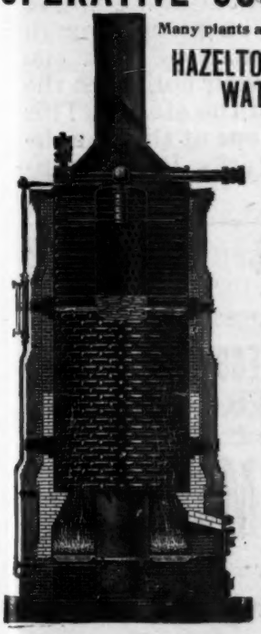

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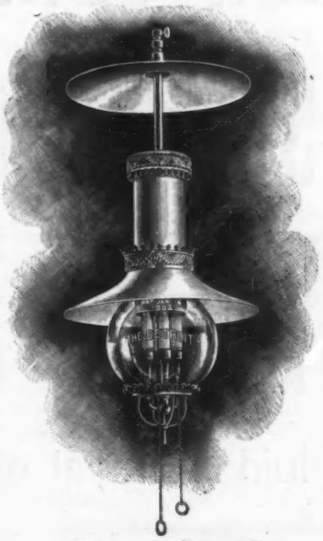

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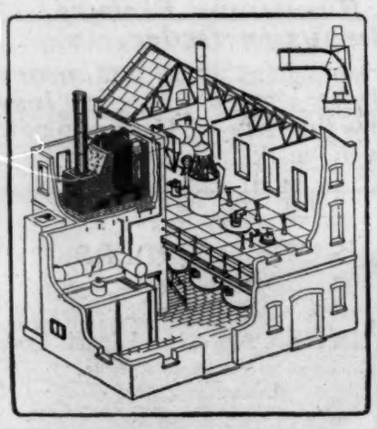

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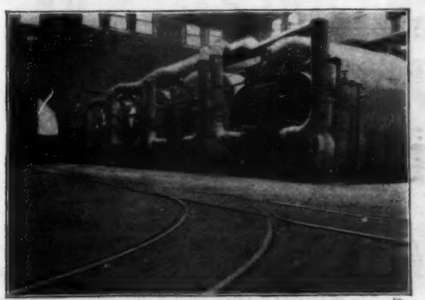

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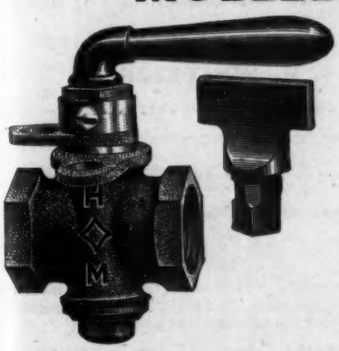

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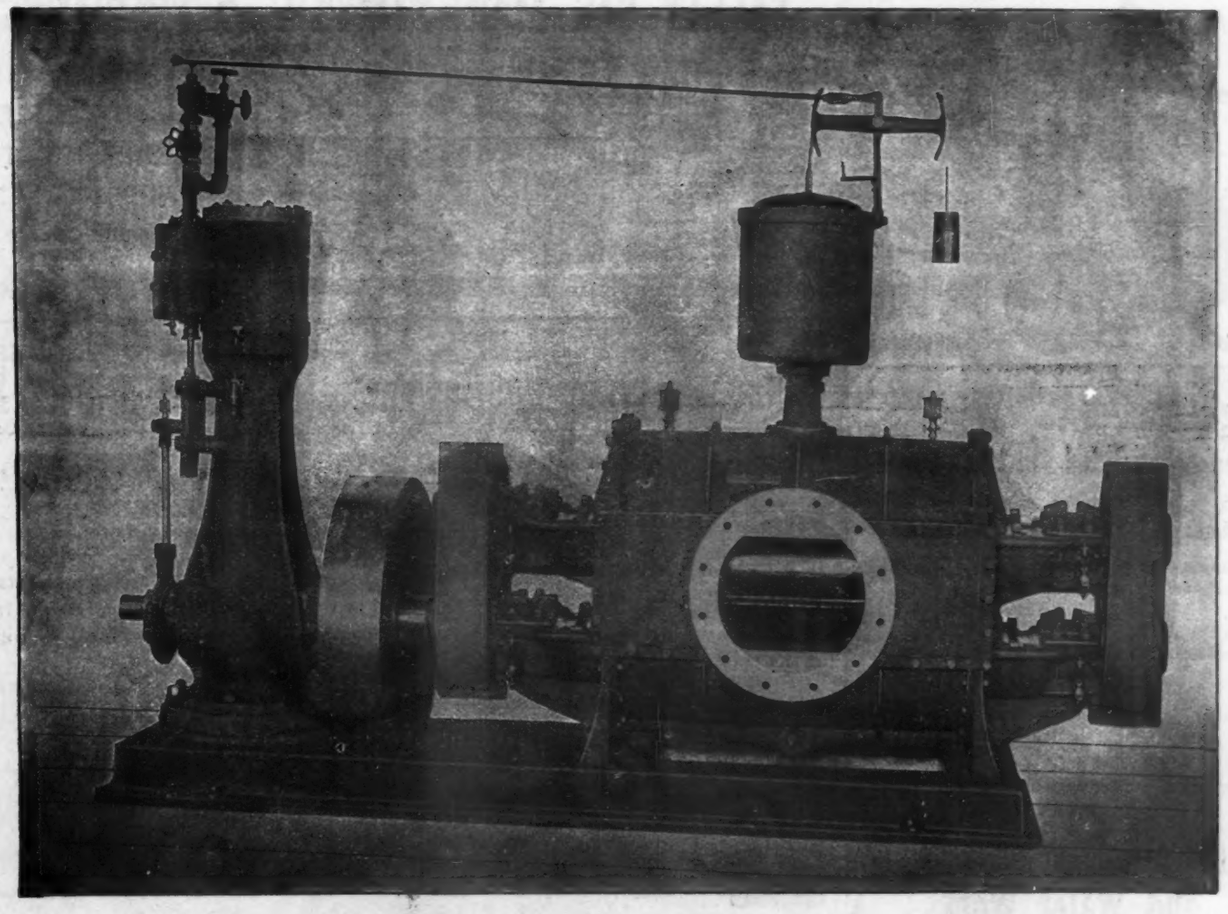

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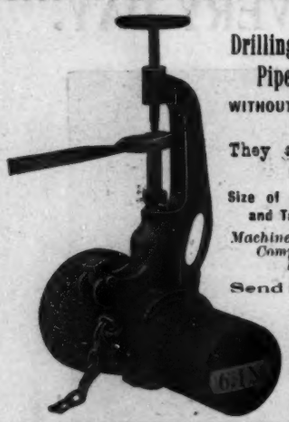

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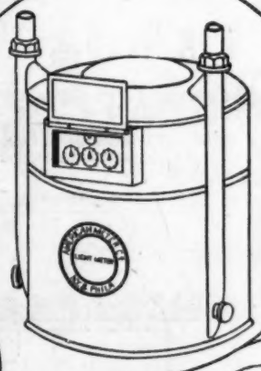

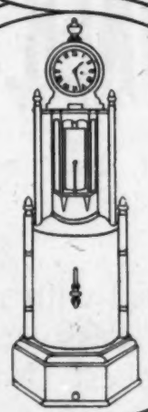

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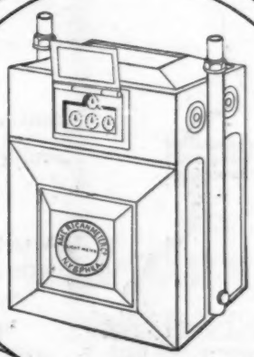

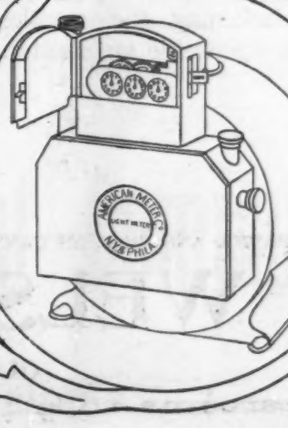

PUBLIC LIGHTING TABLE.

OCTOBER, 1902.

Day of Week.	Table No. 1. FOLLOWING THE MOON. Date.	Light.	Extinguish.	Table No. 2. NEW YORK CITY. ALL NIGHT LIGHTING. Light.	Extinguish.
				P.M.	A.M.
Wed.	1	6.10 PM NM	5.00 AM	5.30	5.00
Thu.	2	6.10	5.00	5.30	5.00
Fri.	3	6.10	5.00	5.30	5.00
Sat.	4	6.10	5.00	5.30	5.00
Sun.	5	6.10	5.00	5.30	5.00
Mon.	6	7.50	5.00	5.30	5.00
Tue.	7	8.30	5.00	5.30	5.00
Wed.	8	9.20	5.00	5.20	5.10
Thu.	9	10.20 FQ	5.00	5.20	5.10
Fri.	10	11.10	5.00	5.20	5.10
Sat.	11	12.10 AM	5.00	5.20	5.10
Sun.	12	1.10	5.10	5.20	5.10
Mon.	13	2.10	5.10	5.20	5.10
Tue.	14	3.20	5.10	5.20	5.10
Wed.	15	No L.	No L.	5.10	5.20
Thu.	16	No L. FM	No L.	5.10	5.20
Fri.	17	No L.	No L.	5.10	5.20
Sat.	18	5.40 PM	7.20 PM	5.10	5.20
Sun.	19	5.40	8.10	5.10	5.20
Mon.	20	5.40	9.10	5.10	5.20
Tue.	21	5.40	10.10	5.10	5.20
Wed.	22	5.40	11.10	5.00	5.30
Thu.	23	5.40 LQ	12.20 AM	5.00	5.30
Fri.	24	5.40	1.20	5.00	5.30
Sat.	25	5.40	2.30	5.00	5.30
Sun.	26	5.30	3.30	5.00	5.30
Mon.	27	5.30	5.30	5.00	5.30
Tue.	28	5.30	5.30	5.00	5.30
Wed.	29	5.30	5.30	4.45	5.35
Thu.	30	5.30 NM	5.30	4.45	5.35
Fri.	31	5.30	5.30	4.45	5.35

TOTAL HOURS LIGHTING DURING 1902.

By Table No. 1.	Hrs.Min.	By Table No. 2.	Hrs.Min.
January	238.30	January	423.20
February	196.20	February	355.25
March	196.20	March	355.35
April	166.40	April	298.50
May	151.40	May	264.50
June	131.10	June	234.25
July	142.40	July	243.45
August	162.00	August	280.25
September	179.00	September	321.15
October	216.30	October	374.30
November	224.10	November	401.40
December	250.00	December	433.45
Total, yr.	2255.00	Total, yr.	3987.45

NEW YORK, 33 Nassau Street. PHILADELPHIA, Broad and Arch Streets. CHICAGO, Foot of Orleans Street. BOSTON, 624 Tremont Building.
CLEVELAND, 809 Cuyahoga Building. ST. LOUIS, 712 Roe Building. SAN FRANCISCO, 712 Polk Street.

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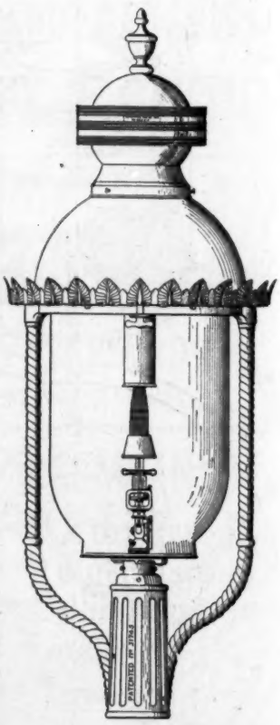

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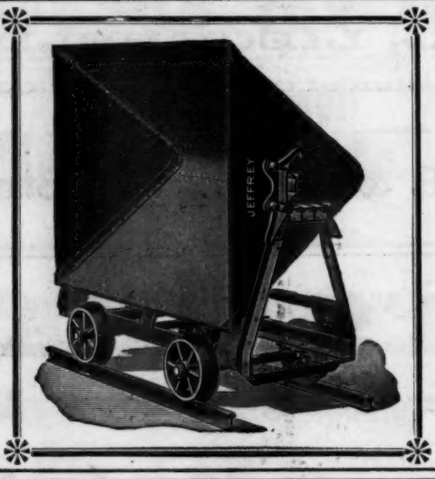

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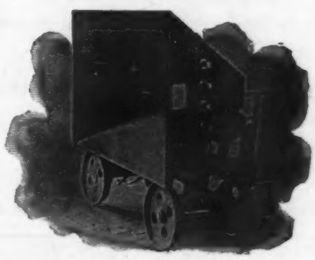

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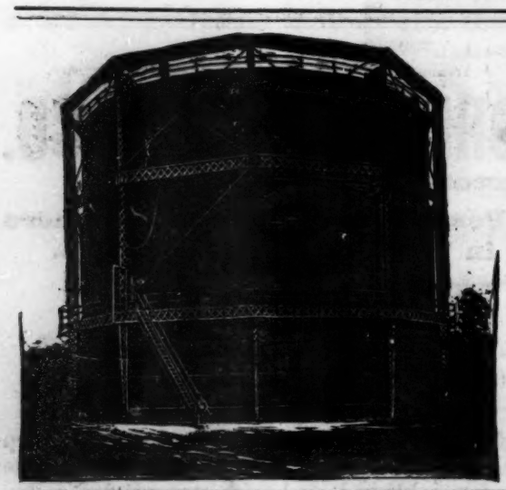

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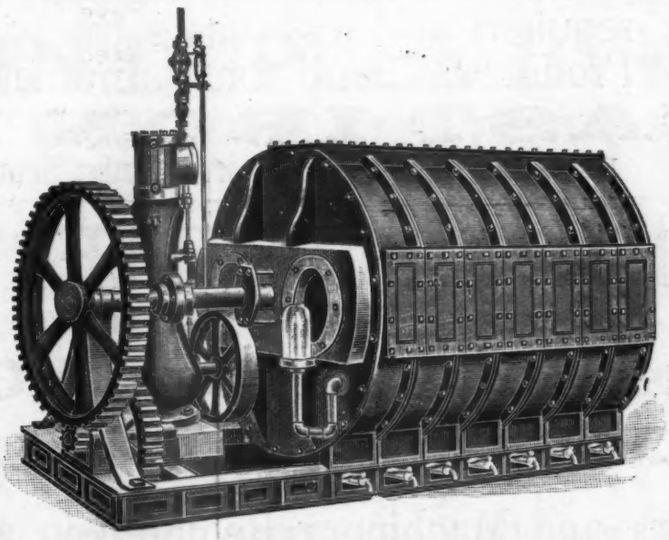

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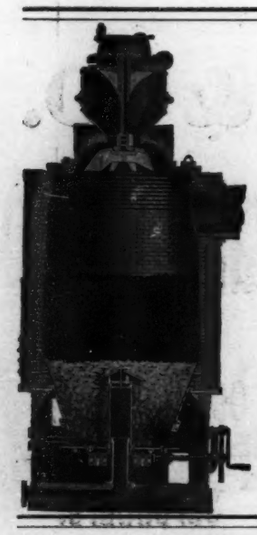

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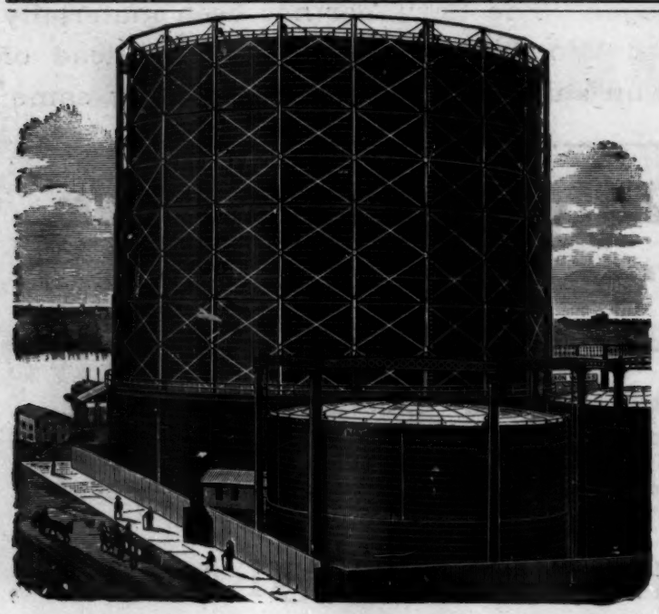

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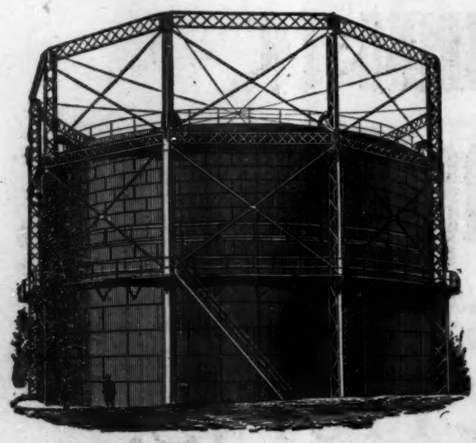

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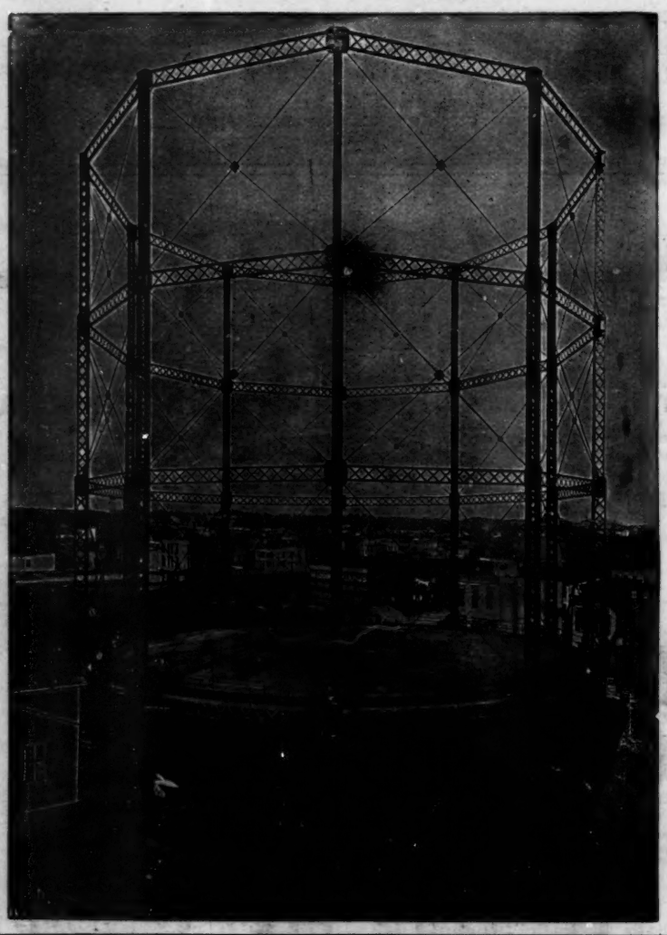

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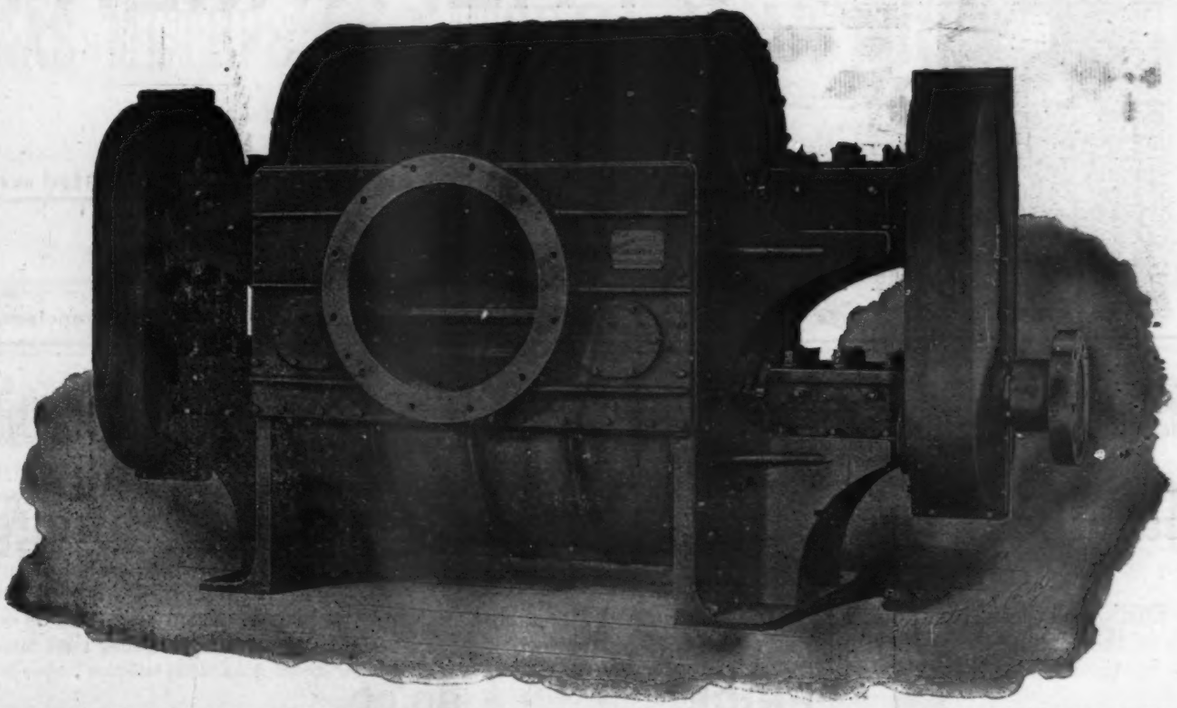

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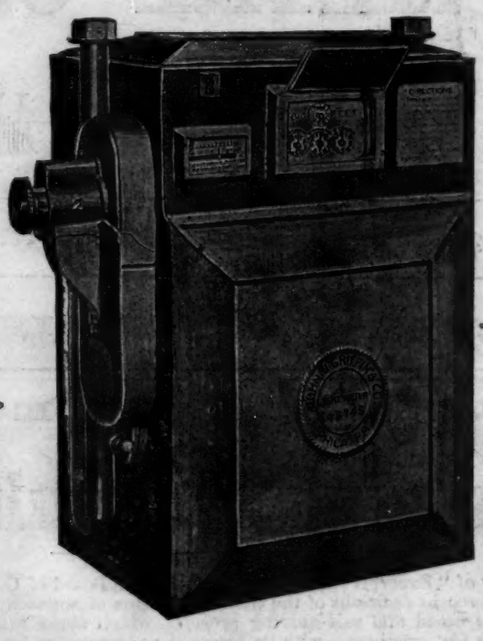

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